Ulster University | Strategic Policy Unit

AI for NI:
A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

Full Document

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Contents

Acknowledgements

About SPU

The Ulster University Strategic Policy Unit undertakes strategic policy analysis and engages with academia and policymakers, to inform policy and drive outcomes for the betterment of Northern Ireland and beyond.

Disclaimer

This report reflects the views of its authors and does not necessarily reflect the institutional position of Ulster University.

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Professor Farry has served as an elected representative in various levels between 1993 and 2024, including holding office as local government councillor, Mayor, member of the Northern Ireland Assembly and a Member of Parliament. Between 2011 and 2016, he was the Minister for Employment and Learning on the Northern Ireland power-sharing Executive.

He participated in the negotiations that resulted in the Belfast/Good Friday Agreement (1998) and has been involved in many subsequent negotiations in relation to the Northern Ireland peace and political process. He has also been a consultant for the National Democratic Institute for International Affairs.

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Dr Carson has served as a Senior Parliamentary Adviser in the House of Commons and as a Special Adviser to the Minister of Agriculture, the Environment and Rural Development in the Northern Ireland Executive.

Previously, she was a Senior Economist within the Economic Policy Centre at UU, and subsequently a Course Director at the Business School. She has also been a Senior Economist with Oxford Economics, an Economist in the Northern Ireland Civil Service, a committee subject specialist in the Northern Ireland Assembly, and worked in corporate banking.

She has been involved in negotiations between the UK Government and Northern Ireland Executive on a financial package for the devolved government, and participated in political meetings with UK Ministers, including the current and previous Prime Ministers.

Five Key Messages

1 AI has the potential to improve the outlook for the Northern Ireland economy, including in relation to our productivity gap, but this will require strategic and cohesive policymaking.

2 AI should be regarded as a key component of public service transformation, contributing to better outcomes and more sustainable public finances in NI.

3 AI adoption must be placed within a strong governance framework, with strong ethics, a commitment to open communication with citizens and full transparency, in order to maximise trust and mitigate risks.

4 AI will drive demand for new technical skills and also bring wider changes to the overall skills landscape, thereby requiring a particular policy focus on the evolution of all levels of education and training.

5 NI should have its own AI strategy that builds on the Executive's current work on AI in the public sector, addresses key strategic drivers and policy dependencies, and actively drives desirable socio-economic outcomes.

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

Executive Summary

Introduction

This paper considers the emerging technological revolution that is Artificial Intelligence (AI) from a strategic policy perspective for Northern Ireland. **It is not intended to be technical in nature, but rather to identify the potential socio-economic and strategic significance of AI for this region, and to draw out policy recommendations across a range of areas.**

The very nature of this issue is such that it **must be addressed at a strategic overarching level**, acknowledging policy dependencies across a range of departments.

The Executive's current Task and Finish Group, under the leadership of the Chief Science and Technology Adviser Professor Helen McCarthy, is driving forward significant progress regarding the use of AI in the public sector. However, there is a strong case for the development of a wider AI Strategy for Northern Ireland.

It is acknowledged that AI is a fast-moving area and policymaking is doubly challenging in such an environment. **However, this technology presents both opportunities and risks – the outcomes of which are largely dependent on existing and emerging Government policy.**

The Executive must act urgently across a range of areas, from the use of AI in schools, to plans for datacentres, energy and climate implications, issues regarding trust and ethics, and the scope for skills and labour market structures to be disrupted.

Given the pace with which AI is developing, **delay or inaction across any of these policy areas is likely to have deep and lasting consequences for Northern Ireland.** As challenging as it is, it will be easier and more efficient to seek to mitigate against unintended consequences than to seek to repair thereafter.

Equally, we must act quickly to grasp the opportunities associated with AI. **NI is well placed to do so given factors such as relative size and skills base. In turn, this technology could have important consequences for productivity levels in this region.**

SPU intends that this paper contributes to cohesive and cross-cutting dialogue around the issue of AI within policymaking in NI. **We outline the significance of this technology and the particular socio-economic context that pertains to NI, review comparative practices in other regions and in relation to the public sector specifically, and identify a number of key policy imperatives – or 'drivers' – for the responsible and effective deployment of AI in NI.**

Our identified drivers include: 'Data, Trust, Risk and Regulation'; 'Infrastructure and Sustainability' and 'Skills' – it is our view that all of these issues should feature in an overarching AI policy for NI.

We look forward to developing further thinking as this technological revolution continues to unfold, to seek to influence the manner in which it ultimately influences lives and livelihoods in NI.

Policy Significance of AI

Artificial Intelligence (AI) is a major emerging technological revolution that has the potential to significantly reshape our economy, our society, and how we live our lives.

Whilst there is a range of perceptions amongst the general public as to the potential usefulness or trustworthiness of AI, **there is a broad scientific consensus that it is here to stay.**

AI offers the potential for significant productivity gains for both the private sector and public services.

The OECD has ranked the top ten benefits of AI, ranging from accelerated scientific progress, reduced inequality and poverty, better approaches to mitigating climate change, better healthcare and education services, improved job quality and more empowered citizens.

It is SPU's view that, **in order for NI to adequately harness the potential benefits associated with AI, it is important to acknowledge underlying policy dependencies and also to flag potential risks and unintended consequences.**

To inform this, SPU has carried out a review of international best practice. **This draws out the importance of strong governance, ethics, and transparency regarding the application of AI tools. Trust is also key to sustaining public support in this new technology.**

There are a range of additional key strategic policy imperatives for success including: **access to data, provision of sufficient physical infrastructure, educational and climate considerations, consequential skills and labour mismatches, and the need for proactive development of newly relevant skills.**

Undoubtedly, the rapid deployment of AI brings **challenges in terms of energy demands and sustainability, uncertainty for the future of the workforce, amongst a range of other risks to be managed and mitigated.**

With AI here to stay, Northern Ireland stands at a critical inflection point. The global **acceleration of AI adoption means that regions that are comparatively slow to act risk being left behind in terms of competitiveness, innovation and productivity.** This implies future economic detriment and further divergence from other regions in terms of both productivity and public service outcomes.

SPU welcomes the fact that much work is now happening across the Northern Ireland Executive to develop an AI Action Plan which is grounded in strong governance and ethics, and to address the opportunities in the public sector. **This constitutes a core element of public sector transformation in potentially driving better outcomes and, in due course, more sustainable public finances.**

Economic Significance of AI

AI has the potential to drive productivity, innovation and efficiency – all of which imply benefits for the global economy. **It is therefore possible that AI could enable a new economic model for those countries that embrace the technology and harness it strategically and responsibly.**

A lack of growth and relatively low levels of productivity are persistent features of the UK economy. Prevailing instability and uncertainty, alongside deeper structural problems, are such that the UK has suffered from a lack of investment for well over a decade, creating a drag on growth.

Sluggish growth in the UK has been consequential in exacerbating constraints on public finances, **with impacts on Northern Ireland in terms of a deteriorating outlook for local public services and underlying finances.**

AI is widely projected to significantly boost global economic growth over the next decade. Whilst global economic prospects appear promising, **the benefits of AI are unlikely to be evenly distributed.** Developed economies with robust digital infrastructure and AI strategies are poised to gain the most.

In the local context, effectively harnessed **AI could present a potentially transformative opportunity to bridge prevailing gaps in economic outcomes between other regions of the UK and NI by enhancing productivity, improved educational and skills outcomes and driving sustainable, inclusive economic development across NI.**

Much of the economic growth from AI-powered innovation depends on workers actually adopting the technology. It is likely that rates of both business and public sector adoption will depend heavily on levels of trust in the technology.

Within Northern Ireland, many academics and dynamic companies are driving innovation, and businesses and public sector actors are adopting and utilising various AI tools. AI adoption amongst NI businesses is on the rise, with businesses reporting plans to further invest or upscale. As might be expected, uptake is greater in larger organisations.

As a relatively small and agile region, NI has the potential to lead in AI innovation and adoption, supported by local universities and the appropriate policy environment from government.

The Northern Ireland Artificial Intelligence Collaboration Centre (AICC) is spearheading many initiatives and efforts to collaborate with the private sector and to establish NI as a leader in responsible AI innovation and implementation.

From an economic perspective, **it would be worth considering how AI adoption might impact on NI's productivity gap**. There is a relative absence of research on the link between AI and productivity for nations and regions. However early studies consider the productivity gap between companies and suggest that AI can be effective as a leveller, and asserts that this implies similar scope for the levelling-up of economies.

A Bespoke AI Strategy for NI

The NI Executive is currently working at pace to develop an AI strategy and action plan, which is largely centred around adoption of AI across the Northern Ireland public sector.

This process is being driven by the Chief Scientific and Technology Adviser to the NI Executive, Professor Helen McCarthy. **It is particularly notable, and welcome, that the current Executive work is heavily grounded in the need for strong governance and clear ethics.**

There is an argument for expanding the current work of the Executive on a strategy and action plan, focused mainly on the public sector, to a wider AI Strategy encompassing a range of relevant socio-economic issues. This could address public policy interventions to address deployment and innovation across both the public and private sectors, and also consideration of key supporting drivers of change around data, skills and education, and infrastructure.

Such a Strategy would reflect the cross-cutting reality of AI for the Executive, and map out policy dependencies. This would be consistent with the approach taken for example in both Scotland and Ireland.

International AI Policy

International policy relating to AI can provide examples of governance principles, ethics and best practice in both design and delivery. **There is no agreed system of global governance in terms of regulation for Artificial Intelligence.** However, various international bodies and NGOs have set out a range of guidance.

International organisations including the G7, United Nations Children's Fund (UNICEF), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), and the Council of Europe have all **provided frameworks on governance and ethics**. The OECD continues to play a leading role in both addressing governance and ethics issues, and providing policy and practice guidance.

The EU AI Act (2024) seeks to provide a comprehensive approach to managing risks and regulations for what are deemed to be high-risk systems and applications, **to protect fundamental rights of EU citizens and to maintain a framework for businesses**. All businesses wishing to sell any AI-related products into the EU will need to comply with the Act. **At present, some aspects of the Act are applied to Northern Ireland under the Windsor Framework.** There is an ongoing discussion between the UK and EU on a proposal from the latter for full application of the Act to NI.

Developments in UK and neighbouring jurisdictions

The UK already has a significant academic, private and public sector base in AI. The UK launched its National AI Strategy in 2021 to position itself as a global AI leader.

The UK's recent AI Opportunities Action Plan covers a broad range of issues including skills and infrastructure requirements, attracting talent, adoption and innovation in both the public and private sectors, in order to drive economic growth, directly benefit citizens, and open up new opportunities.

The Scottish Government first devised an AI Strategy in 2021. **It is particularly notable that the Scottish strategy is broad-based and looks to the wider economy and society.** The OECD Principles on Artificial Intelligence and UNICEF's **policy guidance on AI for children** also underpin the Strategy.

The Scottish AI Alliance, drawing its members from across society, business and academia, is tasked with the delivery of the Strategy. In light of the ongoing debate around the sustainability of AI, **it is noteworthy that the AI Alliance is sponsoring a People's Panel to discuss AI and Climate Change.**

The Scottish Data Lab is a platform for innovation in data and AI. The Scottish AI Playbook provides a guide to the principles, practices and actions required to implement the AI vision. Finally, the Scottish AI register provides information regarding the deployment of AI by the Scottish Government and within the wider public sector, in order to build trust and transparency around processes and use of data.

Notably, Wales has implemented a social partnership approach to AI related workforce issues developed by the Workforce Partnership Council.

In Ireland, the first AI Strategy, entitled "AI – Here for Good," was put in place in 2021. It was refreshed in 2024, primarily to take into account the EU AI Act and technological developments. **As with the AI Strategy in Scotland, the Irish AI Strategy looks at some broader economic, skills, infrastructure and societal issues.**

The Irish Programme for Government in 2025 included extensive commitments regarding digital and artificial Intelligence, based around positioning Ireland as a Leader in the Digital Economy and Artificial Intelligence fields. **The Irish Government also has a Minister with a brief that directly references AI.** Niamh Smyth TD is Minister of State at the Department of Enterprise, Trade and Employment with responsibility for "Trade promotion, artificial intelligence and digital transformation".

The Irish AI Advisory Council, comprising leading experts from academia, industry and civil society, has been established as an independent body to provide expert advice to the Irish Government on all aspects of artificial intelligence. A notable proposal of the Council is for the establishment of an AI Observatory.

AI in the Public Sector

It is important to note that governments have been using digital and other AI solutions for many years. However, the onset of generative AI has the potential to take this to a new level.

Artificial Intelligence should be regarded as central to public sector transformation in Northern Ireland. **AI carries huge potential to be relevant to government and the wider public sector in two respects: for civil service processes, and even more significantly, for public services – both of which have implications for public finances.**

In particular, there is significant potential for AI to enable a greater focus on prevention and early intervention on a broad range of issues, fuelling public sector transformation – the focus of SPU's previous report. There is a strong case for upscaling the current Transformation Fund to further resource and embed the adoption of AI in the public sector.

Globally, countries like the US, Finland, Estonia, Singapore and China are frequently cited as leading innovators in AI. Some key areas where AI is making a difference include:

- Improving citizen engagement services with AI-powered chatbots to answer queries, resolve issues and provide timely updates.

- Enhancing cybersecurity and protecting data.

- Healthcare innovation, including in public health and prevention, through helping to analyse health data, predicting disease outbreaks, enhancing patient care and targeting resources.

- Providing personalised learning experiences, better tracking of student progress and making education more accessible.

- Improving the efficiency and effectiveness of energy, public utilities and transportation management.

In contrast with other jurisdictions, including our direct neighbours, there are limited examples to date in the public domain on the use of AI in the public sector in Northern Ireland.

Strategic Policy Imperatives

Key Strategic Driver 1: Data, Trust, Risk and Regulation

Data is foundational to Artificial Intelligence, determining the accuracy and bias – or lack thereof – in AI systems, and is therefore central to the development of responsible AI.

At present, public data in NI is heavily siloed within various Departments and Arm's Length Bodies. Work should be undertaken to break these barriers down. **The Executive will need to target data barriers between and within departments, in order that they can fully leverage AI systems for optimal service delivery and other benefits.**

The creation of a National Data Library (NDL) is currently underway in the UK. This seeks to scale up data infrastructure, address barriers that impede the efficient use of data, ease access and help bridge different datasets and methods of collection. Fundamentally, it is about making the greatest economic and societal use of the data resources available.

The Executive might wish to consider the case for the establishment of a Regional Data Hub as an equivalent, localised model of the National Data Library.

Northern Ireland's Open Data Strategy, 2020-2023, is now out of date. In the age of Artificial Intelligence, there is a strong case for the Executive to devise a revised strategy.

Trust and public confidence are key to the sustainable adoption and deployment of Artificial Intelligence. Accountability, transparency around data use, governance and mitigation of risk are all key determinants of that trust and confidence.

A number of studies have been undertaken regarding public attitudes and trust in AI. The common trends from the surveys conducted are that growing numbers of people are using AI, but trust and confidence levels remain mixed, with strong support for increased regulation. **This is still an early field of research, and there do not appear to be many Northern Ireland specific surveys to date.**

It is incumbent upon policymakers to address these perceptions and public fears. The need for accountability points to the need for open debate, democratic oversight and stakeholder engagement. There is a strong case for the Executive to put in place a communications strategy regarding AI and, in particular, demonstrate transparency regarding the adoption of AI within the public sector and how data is being used.

This trust and transparency could be further reinforced by the Executive facilitating an annual tracker poll specific to Northern Ireland to measure public attitudes and levels of trust in AI.

Particularly in the public sector, there is also a need for a strong governance and ethical framework around AI, drawing upon international principles and best practice. Further, as also articulated earlier, **there is a case for considering some of the structures put in place in, for example, Scotland and Ireland to bring in a wider range of voices, including from outside of government, around AI.**

Transparency regarding the operation of AI tools is also a significant issue in engendering trust. The UK Government has developed the Algorithmic Transparency Recording Standard (ATRS) and **Scotland has put in place its AI Register. The Executive may wish to consider something similar.**

Risks associated with malicious use of AI range from harm to individuals through fake content to copyright infringements, with many others in between. The OECD has set out its top ten risk mitigation measures. **It is worth considering whether any of these risks, and the challenges of mitigation, may be particularly acute in Northern Ireland. For example, given Northern Ireland's diverse nature and contested history, a greater premium is placed on equality and human rights protections. As such, there is the potential for exacerbated actual, or perceived, bias.** The approach adopted to the collection and management of data will be key in managing this.

Regulation of Artificial Intelligence for activities within Northern Ireland is largely outside the control of devolved institutions, and involves an intersection between UK and EU regulation. The UK has not yet adopted a single regulatory framework for AI and instead has opted to rely on a range of pre-existing laws and regulations. Rather, the Government has asked individual regulators to factor AI into their work.

There has been relatively little public debate on the extent to which, the EU AI Act should apply to Northern Ireland as set out above. Given that most NI-based companies, and indeed many businesses from other jurisdictions, will seek to place their products on the EU market, there may be little practical difference from the full application of the Act. In common with other countries and regions, it will be advantageous for companies to build AI models in line with EU requirements. However, there is the potential for some complexities regarding different legal regimes. Irrespective of the final outcome, it is in Northern Ireland's interests for this matter to be resolved as quickly as possible to provide certainty and stability for investors.

Key Strategic Driver 2: Infrastructure and Sustainability

The functioning of artificial intelligence tools and systems depends on the provision of data centres. At present, data centres are a significant focal point for investment from both governments and the private sector, driven by the AI revolution.

Affordable, reliable and sustainable electricity supply will be a crucial determinant of AI development, and countries that can deliver the energy needed at speed and scale will be best placed to benefit. However, AI presents a range of challenges and opportunities in relation to energy use, and wider implications for climate change objectives. The operation of AI models is much more energy intensive than other IT solutions. Access to water for coolant purposes is also a major consideration.

This level of demand poses questions regarding the environmental sustainability of data centres and implications for meeting the net-zero objectives of the Paris Agreement. However, current mitigations exist, and others may be developed.

These issues become pertinent in the context of any further demand for data centres within Northern Ireland, including how their development will affect Northern Ireland's legislative climate change requirements, and how practical issues regarding access to electricity and water will be met.

It remains unclear whether AI will continue to be a net drag on meeting climate change objectives, or whether growth in renewable energy sources, including via AI-driven efficiency in the energy sector and in other areas of technology may mitigate against such negative impacts.

Ireland has seen significant inward investment in datacentres. This absorbs over 21% of national electricity consumption versus a worldwide average of datacentres consuming 1-2% of overall power. Concerns have been expressed as to the sustainability of this approach.

The Scottish Government has been marketing Scotland as an investment location for data centres, highlighting their renewable generation capacity, and an action plan for green data centres and digital connectivity has been in place since 2021.

There may be scope for the Executive to consider whether a formal plan for managing the development of data centres in Northern Ireland should be devised, including an assessment of domestic and inward investment demand and the capacity from existing and future renewable energy provision.

The potential positive and negative impacts on legislative climate change commitments would also need to be taken into account. This could include planning requirements regarding the use of renewable energy or other net zero technologies.

Further to this, consideration may be given to the opportunities to collaborate on an all-island basis to better distribute the demand for data centres. There are mutually beneficial opportunities in that, in 2024, the dispatch down figure for renewable energy in Northern Ireland was 26%, but by contrast the equivalent figure for Ireland was only 9%.

Northern Ireland is facing challenges related to weaknesses in the electricity grid, the speed of the planning system, and water and sewerage connections. If unaddressed, these may be barriers to further developments. However, increased investment in renewable energy associated with the development of data centres may facilitate improvements to the grid.

Key Strategic Driver 3: Skills, Education and Workforce

The increased deployment of Artificial Intelligence brings immediate AI-specific skills pressures, but also has the potential to radically reconfigure the labour market and change the skills landscape in terms of the profile and level of skills in demand.

This will pose challenges for policymakers in terms of readjusting education and skills provision, and finding the right balance between anticipatory and reactive interventions.

The demand for certain roles or aspects of jobs will vary. **AI may replace some jobs altogether, others may be relatively untouched, but it is likely in the plurality of cases that AI will change job roles, driving efficiency and productivity.**

There are three key challenges for policymakers in Northern Ireland:

1. Understanding the evolving skills and workforce landscape in general

2. Determining how the skills landscape will develop specifically in Northern Ireland

3. Implementing changes to skills and education policy, provision and practice

Different analysts and commentators perceive a range of impacts, from significant net job creation to significant job losses and increased unemployment. **Nevertheless, the scale of change in the skills landscape and the workplace may be so rapid and of such a magnitude as to necessitate anticipatory action by policymakers.**

Most obviously, pressures will likely build for specific AI-related skills. This requires both upskilling in the workplace and ensuring sufficient numbers of the workforce are AI-literate and ensuring there is a sufficient pipeline of new talent coming through.

The wider impact of AI on jobs could fall into three categories:

• Replacement or disruption

• Augmentation

• Relatively unaffected

AI will not only impact upon routine and repetitive tasks, but have implications across a wider range of activities. **Some degree-level jobs will be impacted. However, overall it is likely that AI will shift the demand for skills proportionally up the skills ladder. By contrast unlike previous technological advances, short of further breakthroughs in terms of robotics/AI intersections, the pressure is less likely to be in manual or blue-collar employment but across a range of office-based or white-collar roles.**

AI literacy may emerge as a standard pre-requisite in the workplace, alongside a greater demand for soft skills related to adaptability and problem-solving within an AI-augmented workplace. However, AI literacy is not keeping pace with adoption.

Analyses also suggest that there are some **significant gender differences in terms of how AI is being used and the nature of job and job roles that will be impacted by AI.**

Given the particular skills profile of Northern Ireland, with a greater proportion of low or unskilled workers relative to other advanced economies, the scale of upskilling and reskilling required may be steeper.

Arising from this general overview and assessment, **the question then becomes one of determining how the skills and workplace projections may apply in the particular circumstances of Northern Ireland**. At the same time employers and the Northern Ireland Skills Barometer are reporting a range of skills shortages.

In the context of the potential for AI to provide the means to close Northern Ireland's productivity gap, provided the right policies and investments are put in place, addressing this skills challenge is even more crucial.

This initial analysis points to the need for more detailed research to be undertaken to identify the potential skills demands and changes in the nature of the workforce arising from increased AI deployment and adoption. In conjunction with the Department for the Economy, Matrix – the Northern Ireland Science Industry Panel – has commenced a project entitled "AI and the future of work".

There may also be opportunities for dialogue and collaboration on AI-related skills development on a north-south and east-west basis.

A very broad range of interventions will be required across all levels of education and skills provision to address a range of objectives.

These include:

• Ensuring educational and training systems are providing the necessary skills and knowledge for those directly involved in AI innovation and development or using AI heavily within their work.

• Making wider changes to the educational and training system to take into account the changing nature of work to ensure that individuals have the practical, employability skills and knowledge to fully participate in the future labour market and thus ensure that Northern Ireland is a competitive economy.

• Adapting how school, colleges and universities relay knowledge and skills.

• Addressing marginalisation from the labour market, and the intersection with the digital divide.

In some circumstances, responses may involve consolidation, adaptation and intensification of existing programmes. In other respects, new policies and programmes may need to be devised.

Given the potentially transformational significance of the AI revolution with the associated need for nations and regions to be competitive, there may be a strong rationale for increased resources for upskilling and reskilling in order to fully capture new opportunities available.

Fundamentally, there is a need for a skills strategy or action plan that encompasses the demand for AI-related skills and the wider changes to the skills landscape. This could take the form of an expansion and refresh of the current Digital Skills Action Plan or a fresh process and document entirely.

A broad range of steps should be considered involving careers advice, STEM/STEAM course availability, gender balance promotion, offering of AI literacy, reform to apprenticeships, and life-long learning and reskilling opportunities.

There is an ongoing debate in terms of how far AI can and should be incorporated into the curriculum in schools and in course content in colleges, apprenticeships and universities.

There are fears that AI may compromise academic standards, whilst others argue that AI skills will be so integral to the workplace that the approach to learning should adjust and embrace this new reality with a standardised approach to the achievement of AI literacy for school pupils and college/university students. In some international cases, AI is being integrated into the curriculum.

Northern Ireland is already characterised by significant skills differentials, reflecting wider inequalities within society. **Looking ahead, differential engagement with AI could see further divergence in terms of economic and other prospects, plus missed opportunities to fully utilise potential talent.**

Standardised AI education could help to reduce the risk of a divide through providing more equitable access and opportunity. However, education alone cannot address the digital divide. There will be a requirement for other programmes aimed at adults, particularly those who are currently marginalised from the workforce. **AI provision could be introduced into programmes that could address economic inactivity and disability employment.**

Ultimately, AI could offer a transformative boost to Northern Ireland's productivity and social equity, should the Executive invest strategically in building a future-ready, AI-literate workforce.

Policy Recommendations

Strategic & Economic Context

- The Executive may wish to consider the potential significance of Artificial Intelligence (AI) in the context of the constrained economic and financial outlook for the UK, and the implications for this for NI in terms of both public finances and public services. NI arguably cannot afford not to exploit this emerging technology to seek to drive better outcomes.

- The Executive should identify the imminent deployment of responsible AI as a core strategic area of action and potentially key enabler for delivering on a range of Programme for Government commitments.

- The Executive should urgently assess the potential for AI to provide a new economic model for Northern Ireland, notably including the potential to tackle the productivity gap between Northern Ireland and neighbouring jurisdictions.

- The Executive should recognise the imminency of the opportunities and potential for unintended consequences associated with the rise of AI. Inaction or delay will result in missed opportunities and inadvertent consequences, which will be both costly and challenging to reverse.

Current NI Strategy

- The Executive should consider expanding the remit of the current work on an AI Action Plan, currently primarily focused upon the public sector, to a much more comprehensive and cross-cutting AI Strategy for Northern Ireland. This should span a range of relevant socio-economic considerations and reflect policy interdependencies and key drivers.

- It may also be important to undertake a full review of the UK's AI Opportunities Action Plan to determine actions that partially or fully fall under the devolved remit and address any areas of divergence or omission.

- Northern Ireland's AI Strategy should be closely aligned with the Programme for Government and Investment Strategy for Northern Ireland.

Comparative Policy Context

- International principles and best practice should inform development of an AI Strategy and Action Plan in Northern Ireland, embedding best practice on ethics, transparency and safeguards, in order to build and sustain public trust and support.

- The Executive should note the broader reach of the Scottish AI Strategy in terms of recognising the wider implications for economy and society, and its linkages to the Scottish National Performance Framework.

- The Executive should consider the models of the Scottish Data Lab, AI Playbook and Data Science and Innovation Accelerator for NI.

- The Executive should consider Wales' social partnership approach to workforce issues arising from the deployment of AI.

- The Executive should consider the AI Advisory Council in Ireland, alongside the Scottish AI Alliance as a potential model for engagement, advice and oversight in conjunction with other AI delivery structures.

- The Executive should explore the proposed AI Observatory in Ireland alongside the OECD AI Policy Observatory, with a view to implementing similar functions in Northern Ireland either on a standalone basis or part of wider AI-related structures.

AI in the Public Sector

- Consideration should be given to the guidelines from the OECD G7 Toolkit for AI in the Public Sector, namely:

  - establish clear strategic objectives and action plans in line with expected benefits;

  - include the voices of users in shaping strategies and implementation;

  - overcome siloed structures in government for effective governance;

  - establish robust frameworks for the responsible use of AI;

  - improve scalability and replicability of successful AI initiatives;

  - enable a more systematic use of AI in and by the public sector; and

  - adopt an incremental and experimental approach to the deployment and use of AI in and by the public sector.

- The Executive should apply the UK AI Playbook in the decision of public sector AI projects or create a local equivalent.

- Collaborative engagement mechanisms should be put in place across the public sector including between government departments, arms-length bodies, and local government.

- A review should be carried out to assess current AI competency and literacy within the public sector, with a plan devised for upskilling and bringing in external talent, where appropriate.

- The scale of the transformation fund should be increased either from reallocation of funds or via development of creative, mutually beneficial proposals for additional funding from the UK Government as part of a long-term transformation plan. Digital and AI projects ought to form a significant component of any such proposals.

- Policymakers should, as a matter of routine, consider opportunities, challenges and risks arising from Artificial Intelligence in the development of all future policy and programmes.

Key Strategic Driver 1 – Data, Trust, Risk and Regulation

- A revised Open Data Strategy for Northern Ireland should be devised and implemented.

- The Executive should consider the creation of an NI Data Library and/or Regional Data Hub.

- Fresh legislation should be considered to break down some barriers to future data sharing between and within government departments and agencies.

- Opportunities to collaborate on data-sharing on a north-south basis should be fully explored.

- The Executive should embed the Northern Ireland Strategy and Action Plan with a strong ethical framework, drawing upon principles set out by a range of international bodies.

- Consideration should be given to the creation of an oversight or advisory body in Northern Ireland drawing lessons from the Scottish AI Alliance and similar bodies in other jurisdictions, to provide a wider range of academic and civic voices in the development of AI policy.

- In order to aid transparency and trust, consideration should be given to the publication of algorithmic details of AI models used within the Northern Ireland public sector in line with the UK Government's Algorithmic Transparency Recording Standard or using the model of the Scottish AI Registry.

- The Executive should devise an AI Communications plan to explain how it is using AI in the public sector, to help build and sustain trust.

- The Executive should facilitate an annual tracker poll to assess attitudes and levels of trust in Northern Ireland towards AI.

- Consideration should be given to risks that could have a disproportionate impact on Northern Ireland.

- The EU and UK should reach a conclusion on application of the EU AI Act to Northern Ireland as quickly as possible in order to provide certainty to the business community and other stakeholders.

Key Strategic Driver 2 – Infrastructure and Sustainability

- The Executive should consider a formal plan for how the demand for the creation of additional data centres in Northern Ireland will be addressed, including an assessment of domestic and inward investment requirements, and identifying the capacity from existing and future renewable energy provision.

- The potential for collaboration between the Northern Ireland Executive and the Irish Government should be explored regarding the provision and location of data centres on an all-island basis.

- The potential further development regarding data centres should provide a further impetus to address infrastructure challenges in NI in relation to planning, the electricity grid and connections to NI water infrastructure.

- The ongoing development of data centres should be factored into NI's Climate Action Plans, both in terms of potential improvements in the efficiency of energy systems and/or negative impact on net zero targets.

- Consideration should be given to new planning requirements for data centres to ensure the use of renewable energy or other net zero technology.

Key Strategic Driver 3 – Skills, Education and Workforce

- Detailed work should be undertaken to assess the evolving skills needs that will increasingly be required to directly enable AI innovation and application, alongside more general skills impacts across the economy. The forthcoming report from Matrix on AI and The Future of Work is acknowledged and welcomed in this respect.

- The conclusions of such assessments should be factored into skills and workforce policy assumptions, programmes and funding, with the need for both anticipatory and reactive interventions.

- The Digital Skills Action Plan should be refreshed to encompass AI aspects, or alternatively, AI skills needs should be addressed within a new action plan.

- The Executive should consider the integration of AI into all levels of the education system, reflecting on similar international case studies.

- Revised approaches to a number of policies and programmes may be required, including AI literacy and flexibility in apprenticeships, enhanced upskilling and reskilling opportunities, greater promotion of life-long learning, a revised approach to second primary degrees, AI considerations factored into careers advice, greater STEM (or STEAM) provision, and an enhanced focus at addressing gender imbalances within STEM.

- It should be acknowledged that school pupils, and college and university students will be using AI within their studies, and in turn in their future careers, and teaching and assessment methods need to be assessed and adjusted accordingly.

- AI considerations need to be fully integrated into the review of the curriculum in Northern Ireland, with an appropriate balance being struck between embedding necessary foundational knowledge and the provision of contemporary skills.

- The specific opportunity of providing a standardised approach to AI across the education system in Northern Ireland due to the current C2K and future EdIS (Education Information Solutions) networks should be recognised, particularly in light of the need to ensure equality of opportunity for students and minimise the digital divide.

- Universities and colleges should continue to develop specialised undergraduate and postgraduate courses in areas of emerging technological interests.

- Universities and colleges should seek to integrate AI across curricula, including embedding basic levels of AI literacy within all degree or other programmes, and developing stackable AI micro-credentials for academics, students, businesses and the public sector.

- The Executive should consider the potential role for AI in addressing high levels of economic inactivity and relatively low levels of disability employment in NI.

Part 1
Economic
& Strategic Context

Part 1: Economic & Strategic Context

1.1 Introduction

Artificial Intelligence (AI) is a major emerging technological revolution that has the potential to significantly reshape our economy, our society, and how we live our lives. It has been described as the Fourth Industrial Revolution[1], and potentially represents an even greater technological leap than the digital revolution.

Artificial Intelligence is not a singular technology, and there is no agreed definition or delineation of what it does and doesn't cover. AI has been deployed within a range of technologies and to process data for several decades.

While recognising that there is no single agreed definition, the OECD describes AI as the following[2]:

> **An AI system ia a machine-based system that, for explicit or implicit objections, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment.**

A description of AI as provided by the OECD.

AI is frequently framed as a general-purpose technology, following the respective changes historically driven by steam, electricity, and digitalisation in the prior conceptualised industrial revolutions.

Generative AI, which has the capacity to create new content including text, images, music, video and code from analysing and processing data is driving much of the current phase of the AI revolution.

Agentic AI is now the cutting-edge technology, in which AI systems can set goals and take actions autonomously and adapt for changing context and environments.

Artificial General Intelligence in which AI can engage across a broad range of tasks, including thinking and learning, displaying creativity and problem-solving equivalent to a human being, remains to be achieved.

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1   Artificial Intelligence in the Era of 4IR Drivers: Challenges and Opportunities, Engineering Science & Technology Journal 4(6): 473-488 www.researchgate.net/publication/376831396_ARTIFICIAL_INTELL-IGENCE_IN_THE_ERA_OF_4IR_DRIVERS_CHALLENGES_AND_OPPORTUNITIES [Accessed 19 May 2025]
2   Marko Grobelnik, Karine Perset, Stuart Russell, "What is AI? Can you make a clear distinction between AI and non-AI systems?", 6 March 2025, oecd.ai/en/wonk/definition [Accessed 19 May 2025]

Whilst there is a range of public perceptions as to the potential usefulness or trustworthiness of Artificial Intelligence (AI), there is a broad scientific consensus that it is here to stay.[3]

AI offers the potential for significant productivity gains for both the private sector and public services.

An OECD Expert Group identified 21 potential future AI benefits.[4] Through ranking and synthesis, it put forth ten priority benefits that warrant policy focus:

1. accelerated scientific progress, such as through devising new medical treatments;

2. better economic growth, productivity gains and living standards;

3. reduced inequality and poverty, aided through poverty reduction efforts and improved agriculture;

4. better approaches to address urgent and complex issues, including mitigating climate change and advancing other Sustainable Development Goals (SDGs);

5. better decision-making, sense-making and forecasting through improved analysis of present events and future predictions;

6. improved information production and distribution, including new forms of data access and sharing;

7. better healthcare and education services, such as tailored health interventions and tutoring;

8. improved job quality, including by assigning dangerous or unfulfilling tasks to AI;

9. empowered citizens, civil society and social partners, including through strengthened participation; and

10. improved institutional transparency and governance, instigating monitoring and evaluation.

3   Steven Dudash, Ready Or Not, Disruptive AI Is Here To Stay, January 2025, www.forbes.com/sites/greatspeculations/2023/06/22/ready-or-not-disruptive-ai-is-here-to-stay/ [Accessed 19 May 2025]
4   OECD. *Assessing Potential Future Artificial Intelligence Risks, Benefits and Policy Imperatives*. OECD Artificial Intelligence Papers, no. 27. Paris: OECD Publishing, 2024

In order to adequately harness the potential benefits associated with AI, it is important to acknowledge underlying policy dependencies and also to flag potential risks and scope for unintended consequences. This paper focuses on drawing out these key strategic imperatives, in order that NI is able to compete – and even lead – in this field, capitalising on socio-economic opportunities and mitigating risks.

Our review of international best practice draws out the importance of strong governance, ethics and transparency regarding the application of AI tools. Trust is key to sustaining public support.

SPU has also identified a range of additional key strategic policy imperatives for success including: access to data, provision of sufficient physical infrastructure, skills and educational development, addressing labour market mismatches, and environmental sustainability.

Undoubtedly, the rapid deployment of AI brings challenges in terms of energy demands and sustainability, uncertainty for the future of the workforce, amongst a range of other risks to be managed and mitigated.

What is clear is that AI is here to stay, and Northern Ireland stands at a critical inflection point. The global acceleration of AI adoption means that regions that are comparatively slow to act risk being left behind in terms of competitiveness, innovation and productivity, thereby implying future economic detriment and further divergence from other regions for both the economy and public services.

SPU acknowledges that much work is now happening across the Northern Ireland Executive to develop an AI Action Plan which is grounded in strong governance and ethics and to address the opportunities in the public sector. This constitutes a core element of public sector transformation in potentially driving better outcomes and, in due course, more sustainable public finances.

However, Northern Ireland needs to go further and faster in addressing wider economic and societal opportunities. In particular, by unleashing more efficient ways of working and thus enabling potential productivity gains, a key emerging policy question is whether AI has the potential to level up the productivity gap that has long persisted between Northern Ireland and other jurisdictions.

The risks of inaction, or interim delay, include widening of the productivity gap; a loss of key talent, as skilled workers migrate to jurisdictions with stronger AI ecosystems; missed investment opportunities from private sector innovators; and further embedding of public service inefficiencies.

This paper considers Artificial Intelligence opportunities and challenges from a strategic policy perspective, with a strong focus upon Northern Ireland.

More specifically, it seeks to identify the interconnectivity of AI issues and key strategic drivers and the associated requirement for joined-up policymaking, with an overarching strategic perspective by the NI Executive to capitalise upon the opportunities and to mitigate against risks associated with the advent of AI in NI.

As such, a core recommendation of this report is that the Executive adopt a dynamic cross-departmental strategy seeking to address wider economic and societal opportunities, recognising cross-cutting policy dependencies plus potential north-south and east-west synergies, and supporting the key drivers that would make the deployment of AI a success.

1.2 Economic Implications of AI

1.2.1 Strategic Policy Context

It is widely accepted that AI has the potential to drive productivity, innovation and efficiency – all of which imply benefits for the global economy. It is therefore possible that AI could enable a new economic model for those countries that embrace the technology and harness it responsibly and strategically.

There are, of course, related concerns regarding the potential for job and skills displacement, unequal distribution of gains – i.e. the prospect of AI driving further inequality – as well as other social issues including trust and ethics. These concerns are valid and warrant careful consideration as well as both pre-emptive and reactive policy interventions. We consider some of these issues in forthcoming sections of this paper.

This section specifically focuses on the potential economic impacts of AI, although any ultimate outcomes are likely contingent on the timeliness and effectiveness of related policymaking.

It is therefore our view that, in order to capitalise on opportunities and mitigate against risks, policymakers should strategically drive the socio-economic impacts of AI.

In order to achieve this for Northern Ireland, an overarching AI Strategy is required to enable the Executive to tie together various policy dependencies and potential outcomes. It is this policymaking that will likely determine – or at the very least, shape – the resultant economic impact, positive or negative, that AI has on this region.

This report acknowledges how fast-moving AI is. Nonetheless, it is vital for policymakers to attempt to respond in a timely, and ideally, pre-emptive manner to affect outcomes in key strategic areas, such as in terms of skills, jobs and infrastructure.

A failure to or delay in doing so could result in unintended consequences that could be detrimental and costly to redress; skills displacement and labour market gaps are one such example. Seeking to redress such consequences is likely to be more complicated – and more expensive – than mitigating against their emergence in the first instance.

1.2.2 UK & NI Economic Context

A lack of growth and relatively low levels of productivity are persistent features of the UK economy.[5] Prevailing instability and uncertainty, alongside deeper structural problems, are such that the UK has suffered from a lack of investment for well over a decade, creating a drag on growth.[6]

Sluggish growth in the UK has been consequential in exacerbating constraints on public finances, with impacts on Northern Ireland in terms of a deteriorating outlook for local public services and underlying finances.

It is well documented that Northern Ireland has for many decades struggled with a persistent productivity gap with the rest of the United Kingdom, and also relative to Ireland and most parts of the European Union. Productivity in NI was 13% below the UK average in 2022, widening from 11% in 2021 and is 20% lower than in the Republic of Ireland.[7]

Higher levels of economic inactivity are another longstanding feature of the NI economy. The current NI rate (26%) significantly exceeds the UK average and NI is consistently the worst performing of all UK regions in respect of inactivity relating to ill-health.[8]

In terms of associated impacts on wellbeing, recent research by the Economic and Social Research Institute (ESRI) documents declining standards across a range of educational, health and other social outcomes in NI relative to Ireland.[9]

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5   Notably, most recent growth statistics were higher than expected (0.5% in February); however, it remains to be seen whether this is a temporary spike that has been driven by a boost in export activity prior to tariffs being implemented - https://www.bbc.co.uk/news/articles/cj0zz357532o? [Accessed 21 May 2025]

6   Institute for Public Policy Research (IPPR), "Revealed: Investment in UK is Lowest in G7 for Third Year in a Row, New Data Shows," June 18, 2024, https://www.ippr.org/media-office/revealed-investment-in-uk-is-lowest-in-g7-for-third-year-in-a-row-new-data-shows [Accessed 21 May 2025]

7   Ruth Donaldson, David Jordan, and John Turner, *Northern Ireland Productivity Dashboard 2024* (Manchester: The Productivity Institute, 2024), https://www.productivity.ac.uk/research/northern-ireland-productivity-dashboard-2024/ [Accessed 21 May 2025]

8   Ulster University Economic Policy Centre, Regional Balance in Northern Ireland, 2025 www.ulster.ac.uk/__data/assets/pdf_file/0006/1733739/UUEPC-Regional-Balance-in-NI-Full-Report-Final.pdf [Accessed 21 May 2025]

9   Frances McGinnity, Adele Bergin, Seamus McGuinness, Emer Smyth, Sharing the Island: Economic and social challenges and opportunities: Evidence from an ESRI research programme, April 2025, www.esri.ie/publications/sharing-the-island-economic-and-social-challenges-and-opportunities-evidence-from-an [Accessed 21 May 2025]

Much of this comparative research is encapsulated in differential life expectancy rates, since this reflects a myriad of economic and social factors. In 2021, life expectancy for children aged below one in Ireland was 82.4 years compared to 80.4 years in NI. This gap between Ireland and NI in life expectancy has been widening over recent years.[10]

Simultaneously, the current fiscal outlook for the UK is very tight, with knock-on implications for Northern Ireland.[11] This is compounded by the current uncertainty associated with the Trump Administration's approach to tariffs, which is impacting US bond yields and associated global borrowing costs, creating further pressure on public funds.

In this challenging economic and financial context, there is a clear need for the Executive to engage in creative efforts to drive better local outcomes.

Effective and responsible deployment of AI, with appropriate guardrails in place, could provide a viable mechanism by which to transverse onto a more favourable growth trajectory, enabling renewed optimism as to the economic outlook both locally and further afield.

In the local context, Artificial Intelligence (AI) presents a potentially transformative opportunity to bridge prevailing gaps in economic outcomes between other regions of the UK and NI by enhancing productivity, improved educational and skills outcomes and driving sustainable, inclusive economic development across NI.

It is vital that the Executive consider this emerging technology in the context of the productivity gap in NI, and undertake work to assess its potential role therein.

1.2.3 Potential Economic Impacts of AI

The global market for AI grew beyond $184 billion in 2024, a considerable jump of nearly $50 billion compared to 2023. This staggering growth is expected to continue with the market racing past $826 billion in 2030[12].

Whilst the market for this new technology itself is booming, established impacts on economies are relatively immature, localised and still in infancy.

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10   Frances McGinnity, Adele Bergin, Seamus McGuinness, Emer Smyth, Sharing the Island: Economic and social challenges and opportunities: Evidence from an ESRI research programme, April 2025, www.esri.ie/publications/sharing-the-island-economic-and-social-challenges-and-opportunities-evidence-from-an [Accessed 21 May 2025]

11   Office for Budget Responsibility, Economic and fiscal outlook – March 2025 https://obr.uk/efo/economic-and-fiscal-outlook-march-2025/ [Accessed 21 May 2025]

12   See www.statista.com/forecasts/1474143/global-ai-market-size#statisticCon [Accessed 22 May 2025]

The International Monetary Fund (IMF) suggests that AI could 'significantly accelerate economic growth and help productivity rebound,[13] and projects that global economic output will rise by about 0.5% annually from 2025 to 2030, due to advances in AI.[14] Goldman Sachs anticipates that AI will start having a measurable impact on U.S. GDP in 2027, with effects on other economies following thereafter.[15]

AI is widely projected to significantly boost global economic growth over the next decade. For many other organisations and business consultancies, the IMF estimates is conservative, and even greater levels of economic growth are anticipated, with Goldman Sachs estimating a 7% increase in global GDP over 10 years.[16]

While global economic prospects appear promising, the benefits of AI are unlikely to be evenly distributed. Developed economies with robust digital infrastructure and AI strategies are poised to gain the most.

In 2023, the UK's AI sector comprised over 3,000 companies, generating more than £10 billion in revenues and employing over 60,000 individuals in AI-related roles, contributing £5.8 billion in Gross Value Added (GVA).[17] The UK Government cites an IMF estimate that the full embrace of AI could see a boost to annual growth of 1.5% per annum, and gains would be amount to an average of £47 billion to the UK each year over a decade.[18] Google estimates that the UK stands to gain a vital £400 billion worth of economic growth from AI-powered innovation.[19]

With regard to Ireland, a recent report by Microsoft and Trinity College indicates that AI is expected to add at least €250 billion the economy within 10 years. A further €60 billion in Gross Domestic Product could be gained over that period by putting in place supportive policies and business environments. Gross National Income, meanwhile, could be boosted by at least €130 billion.[20]

13   Michael Spence, AI's Promise for the Global Economy, International Monetary Fund, September 2024 https://www.imf.org/en/Publications/fandd/issues/2024/09/AIs-promise-for-the-global-economy-Michael-Spence [Accessed 21 May 2025]

14   Reuters, AI economic gains likely to outweigh emissions cost, says IMF, April 2025, https://www.reuters.com/sustainability/climate-energy/ai-economic-gains-likely-outweigh-emissions-cost-says-imf-2025-04-22/?utm [Accessed 21 May 2025]

15   Goldman Sachs, AI may start to boost US GDP in 2027, November 2023, www.goldmansachs.com/insights/articles/ai-may-start-to-boost-us-gdp-in-2027?utm [Accessed 21 May 2025]

16   Sizing the prize: What's the real value of AI for your business and how can you capitalise? Generative AI could raise global GDP by 7% | Goldman Sachs IDC predicts that investments in AI solutions and services will yield a global cumulative impact, https://my.idc.com/getdoc.jsp?containerId=prUS53290725&utm https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier

17   UK Government, Artificial Intelligence sector study 2023, October 2024, https://www.gov.uk/government/publications/artificial-intelligence-sector-study-2023/artificial-intelligence-sector-study-2023?utm= [Accessed 21 May 2025]

18   UK Government, Prime Minister sets out blueprint to turbocharge AI, January 2025, https://www.gov.uk/government/news/prime-minister-sets-out-blueprint-to-turbocharge-ai [Accessed 21 May 2025]

19   Debbie Weinstein, AI's potential to tackle the UK's productivity puzzle, Google, April 2025 https://blog.google.mcas.ms/authors/debbie-weinstein/ [Accessed 21 May 2025]

20   Trinity College Dublin Business School and Microsoft, The AI Economy in Ireland 2025: Trends, Impact & Opportunity, www.tcd.ie/media/tcd/business/pdfs/research/Microsoft-Report.pdf [Accessed 19 May 2025]

1.2.4 Current Rates of Business Adoption

The above Google regarding economic growth from AI-powered innovation was caveated to the effect that half of this depends on workers actually adopting the technology.[21]

This demonstrates the significance of business adoption and employee buy-in – and underlying government policies – in determining the economic consequences of AI for any given region. Buy-in levels for both business and public sector adoption will heavily depend on levels of trust in the technology, as well as individual skills and competencies – these are both policy issues that we discuss in subsequent sections of this paper.

Within Northern Ireland, many academics and dynamic companies are driving innovation, and businesses and public sector actors are adopting and utilising various AI tools. Innovation in Northern Ireland is building upon a strong existing software development base.

AI adoption amongst NI businesses is on the rise; while 32% of companies have already invested in AI technologies, larger enterprises show a higher adoption rate at 48%. This trend reflects a growing confidence in AI's ability to enhance productivity and drive economic advancement.[22]

In April 2025, the NI Chamber of Commerce released figures on AI adoption as part of a wider survey of members.[23] This indicated that most companies have already made (32%) or plan to make (23%) an investment over the next three years. However, a significant minority (40%) have no immediate plans to invest in AI.

Large businesses are the most likely to have already adopted or plan to adopt AI, with 42% currently using it. In contrast, only 19% of the largest businesses do not foresee adopting AI, while 48% of small businesses have no plans to implement it.

Based on a relatively small survey of 50 leaders in NI conducted by Trinity Business School and Microsoft:[24]

- 88% report that they are now using AI in some form for work purposes.

- 52% believe AI could significantly boost their net revenue by 30-70% within the next year.

21 Debbie Weinstein, AI's potential to tackle the UK's productivity puzzle, Google, April 2025 https://blog.google.mcas.ms/authors/debbie-weinstein/ [Accessed 21 May 2025]

22 DfE Monthly Economic Update, April 2025 www.investni.com/sites/default/files/2023-03/economic-intelligence-economic-commentary.pdf?utm= [Accessed 21 May 2025]

23 Northern Ireland Chamber of Commerce, April 2025 https://www.northernirelandchamber.com/ni-chamber-news/call-for-policy-makers-to-be-courageous-in-supporting-ni-businesses/ [Accessed 21 May 2025]

24 Trinity College Dublin Business School and Microsoft, The AI Economy in Ireland 2025: Trends, Impact & Opportunity, p10, www.tcd.ie/media/tcd/business/pdfs/research/Microsoft-Report.pdf [Accessed 19 May 2025]

- 86% view AI as a key driver for economic growth and job creation.

- 92% agree on the usefulness of AI.

- 93% acknowledging the impact of the AI tools they have implemented.

- 8% of organisations in NI strictly prohibit the use of free AI tools, whereas a substantial 62% have no formal policy, indicating an absence of structured governance around AI adoption, with 30% of NI organisations actively promoting the use of such tools, embracing a more open approach.

- 70% are aware of individuals leveraging AI tools for specific tasks within their organisations, with 26% reporting frequent usage.

- 90% admit to employing free AI tools themselves, pointing to a potential disconnect between leadership practices and organisational policies.

- 94% anticipate hiring individuals with AI expertise within the next 1-3 years, underscoring a robust recognition of the value AI brings to current and future roles.

- 74% believe that staff can quickly become proficient in using AI in their daily tasks.

- 29% are in the process of planning, developing, or have already instituted an AI policy, indicating a growing awareness and commitment to structured AI integration.

- 82% believe that AI can play a pivotal role in supporting their organisation's sustainability objectives.

- 80% express confidence in their organisations' preparedness and 78% acknowledge that their organisational culture is conducive to AI integration.

- 76% of organisations have implemented enhanced data security measures and 78% believe their organisations adopt a responsible approach to AI integration.

- 80% feel that existing government policies and regulations within their industry often act as barriers to the adoption of new technologies.

Research indicates that businesses in Ireland are integrating AI gradually rather than restructuring around the technology, with only 8 per cent of organisations integrating AI across all divisions.[25]

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25   Irish Times, AI to boost economy by €250bn by 2035, report says, 13 March 2025, www.irishtimes.com/business/2025/03/13/ai-to-boost-economy-by-250bn-by-2035-report-says/ [Accessed 21 May 2025]

There also remains a size-based gap in adoption, with small and medium sized enterprises less likely to use the technology compared to larger enterprises. The 30% gap was attributed to cost concerns and a lack of expertise, while 62% of SMEs said a lack of AI skills was a barrier to its adoption. Only 10% of smaller businesses said they had an AI strategy, compared to 50 per cent of multinationals. Recruitment was also a challenge, with around half of companies finding it difficult to hire AI-trained staff.

The Executive may wish to note the relevance of this finding given the particular dominance of SMEs within the local economy – policy should seek to mitigate any associated adverse impacts in terms of potential AI adoption in NI.

AI should also be central to delivery of the anticipated Research and Innovation Strategy for Northern Ireland, and in turn it will assist with the development of AI.

1.2.5 An Opportunity for NI

As a relatively small and agile region, NI has the potential to lead in AI innovation and adoption, supported by local universities and the appropriate supporting environment from government.

The Northern Ireland Artificial Intelligence Collaboration Centre (AICC) is spearheading many initiatives and efforts to collaborate with the private sector and to establish NI as a leader in responsible AI innovation and implementation[26].

Northern Ireland's tech sector is already well established, and is recognised as a key fintech hub. NI is also a leader in terms of digital technology, with 96% of premises having access to full-fibre broadband[27].

26   www.belfasttelegraph.co.uk/business/ulsterbusiness/profile/the-ai-collaboration-centre-leading-the-way-amid-the-emergence-of-world-changing-tech/a1924633260.html [Accessed 21 May 2025]
27   https://syncni.com/view/12865/tech-trends-of-2024-and-predictions-for-the-year-ahead-what-s-next-for-northern-ireland-and-beyond January 2025 [Accessed 21 May 2025]

Dr. John Bustard, Senior Lecturer in Digital Transformation at Ulster University, perceives a particular local opportunity:

"Northern Ireland is uniquely positioned to take advantage of AI as it moves from the experimental phase to becoming 'critical and essential' to business objectives regionally. Harnessing NI's world-class digital infrastructure and supporting AI skills enablement could create an outsized opportunity for a place with a tradition of punching well above its weight. According to a recent report, 86% of senior leadership in Northern Ireland believe in this opportunity also and there are the obvious sectoral sweet-spots such as cyber-security, agrifood, manufacturing and life-sciences that can bring immediate gains. There's also the fact that micro businesses make up the highest percentage (89%) of our SME's (DfE, 2023)[28] which could highlight a further untapped opportunity to leap ahead in developing 'AI forward' micro enterprise and entrepreneurial networks – with the aim to quickly nurture and scale novel business concepts to international markets. Bottom line, these opportunities will require increased focus on reducing the AI skills gap, which will require a multi-disciplinary ownership of AI education and is needed to mitigate the risks of SME hesitancy and regulatory divergence, all of which could blunt the potential gains if not considered and addressed."

In addition to AI's potential in terms of driving competitiveness and growth within the private sector, there are wider opportunities in terms of public sector implementation and the potential to address the aforementioned productivity challenges that prevail in NI.

From an economic perspective, it would be worth considering the pertinence of AI technology in the context of NI's productivity gap.

A fundamental question arises as to what implications AI may have for this productivity gap. In one respect, economies that already have strong advantages in terms of skills, access to capital and innovation ecosystems might build on those foundations and accelerate ahead. By contrast, using AI to help address the factors that restrict productivity, such as disproportionate levels of low productivity sectors, low skills and skill gaps, could result in the productivity gap being significantly addressed.

28   DfE (2023) Northern Ireland business; activity, size, location and ownership, 2023. Available at: https://www.economy-ni.gov.uk/news/northern-ireland-business-activity-size-location-and-ownership-2023#:~:text=In%20March%202023%2C%20the%20majority%20of%20businesses%20%2889%25,%281%2C655%29%20of%20businesses%20had%2050%20or%20more%20employees. [Accessed: 19 May 2025]. Jha, A.K. and Danks, N. (2025) The AI Economy in Ireland 2025: Trends, Impact & Opportunity. rep. Microsoft Ireland. Available at: https://www.tcd.ie/media/tcd/business/pdfs/research/Microsoft-Report.pdf [Accessed: 19 May 2025].

In the current Programme for Government, the Executive highlights the importance of productivity to its 'Prosperity' mission:

"Improving our economic productivity while making sure that we have an economy that works for everyone, and our story continues to be an inspiration to others.[29]"

The Executive might consider commissioning research to assess this specific local issue, given its centrality to economic-wellbeing in NI.

To date, there is a relative absence of research on this issue, however research which considers the productivity gap between companies suggests that AI can be effective as a leveller.[30]

This research – which was promoted by the National Institute of Economic and Social Research – further suggests that this could have wider implications for the relative productivity of economies:

"Our findings suggest that AI has the potential to function as a General Purpose Technology (GPT), creating opportunities for productivity improvements across the economy. Consequently, targeted policies supporting AI would not only enhance firm-level productivity but could also address the broader stagnation observed in European productivity growth. These policies would help to create a more level playing field, stimulate innovation across sectors, and ensure Europe remains competitive in the evolving digital economy – a core theme of the by Mario Draghi."

Northern Ireland may have a potential, time-bound opportunity to address its deeply embedded productivity gap. Many foundations are already in place, including significant high-level skills, world leading universities, a thriving innovation ecosystem and well-established hi-tech sectors. The key intervention at this juncture is for policymakers to develop a strategy to capture this opportunity, and to revise and scale-up necessary policies and practices.

29   Northern Ireland Executive, Doing What Matters Most: Programme for Government, 2024-27, www.northernireland.gov.uk/sites/default/files/2025-03/programme-for-government-2024-2027-our-plan-doing-what-matters-most_1.pdf, p69

30   Journal of Economic Behavior & Organization Volume 228 Productivity performance, distance to frontier and AI innovation: Firm-level evidence from Europe - ScienceDirect December 2024, 106762 [Accessed 21 May 2025]

Recommendations

- The Executive may wish to consider the potential significance of Artificial Intelligence (AI) in the context of the constrained economic and financial outlook for the UK, and the implications for this for NI in terms of both public finances and public services. NI arguably cannot afford not to exploit this emerging technology to seek to drive better outcomes.

- The Executive should identify the imminent deployment of responsible AI as a core strategic area of action and potentially key enabler for delivering on a range of Programme for Government commitments.

- The Executive should urgently assess the potential for AI to provide a new economic model for Northern Ireland, notably including the potential to tackle the productivity gap between Northern Ireland and neighbouring jurisdictions.

- The Executive should recognise the imminency of the opportunities and potential for unintended consequences associated with the rise of AI. Inaction or delay will result in missed opportunities and inadvertent consequences, which will be both costly and challenging to reverse.

1.3 Northern Ireland AI Policy and Governance

1.3.1 Current Policy Position

The NI Executive is currently working at pace to develop an AI strategy and action plan. This is largely centred around adoption of AI across the Northern Ireland public sector.

The Northern Ireland Programme for Government, 2024-2027, published February 2025, stated that the Executive will:

... address the significant opportunities in emerging technologies such as AI, and better leverage the powers of digital and data, by establishing the Office of AI and Digital. The new Office will sit alongside the Office of Science and Technology and work with the Northern Ireland Statistics and Research Agency (NISRA) and other data and digital leaders across the NICS, to advise the Executive.[31]

This process is driven by the Chief Scientific and Technology Adviser to the NI Executive, Professor Helen McCarthy.[32]

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31   Our Plan: Doing What Matters Most www.northernireland.gov.uk/sites/default/files/2025-03/programme-for-government-2024-2027-our-plan-doing-what-matters-most_1.pdf, p58
32   Ministers announce appointment of Chief Scientific and Technology Adviser, June 2024 www.executiveoffice-ni.gov.uk/news/ministers-announce-appointment-chief-scientific-and-technology-adviser {Accessed 19 May 2025}

In May 2025, in response to written questions from MLAs Cheryl Brownlee and Kate Nicholl, the First Minister and deputy First Minister have set out the nature of this work:

> *"As set out in Programme for Government (PfG) we have tasked the Chief Scientific and Technology Adviser with chairing a Task-and-Finish Group to scope out the role of an AI and Digital Office. The group will include representatives from government departments, industry and academia. This will involve consideration of a number of areas with a focus on public sector reform; governance; skills; data and infrastructure.*

> *"A significant part of the work will look at how we integrate and showcase the expertise we already have, and how we progress the areas that need to be developed.*

> *"The Group will identify the opportunities and risks and how these can be successfully managed by the NICS and the wider public sector through the creation of an AI Workplan."*[33]

and

> *"We are creating an AI Unit and we have tasked the Chief Scientific and Technology Adviser with chairing a Task-and-Finish Group comprising representatives from government departments, industry, and academia to scope out the remit of, and requirements for, an Office of AI and Digital for the region, as set out in the PfG. The first meeting took place in March 2025.*

> *"The Task-and-Finish Group will consider a number of proposed workstream pillars, including public sector reform; governance; skills; data and infrastructure. Work will then commence on the development of an AI strategy on the basis of what is identified through the Task-and-Finish Group.*

> *"A significant part of the work will look at how we integrate and showcase the expertise we already have, and how we progress the areas that need to be developed."*[34]

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33   aims.niassembly.gov.uk/questions/printquestionsummary.aspx?docid=437762 [Accessed 19 May 2025]
34   aims.niassembly.gov.uk/questions/printquestionsummary.aspx?docid=431216 {Accessed 19 May 2025]

plus

"We are working to establish an AI Unit within The Executive Office as part of Reform and Transformation as envisaged in the Programme for Government. This Unit will support public services adoption of AI technologies whilst ensuring they are used ethically and safely, and in a strategic way, addressing concerns around data protection, bias, and the environmental impact of AI. In addition, the AI Unit will ensure that Northern Ireland becomes a hub for AI research and innovation, attracting investment and fostering collaboration between industry, academia, and government.

"To progress this goal, a Task & Finish (T&F) Group has been established to scope out the remit and requirements for the proposed AI Unit. The T&F Group is chaired by the Chief Scientific and Technology Adviser.

"The group will bring together those from across departments, academia and industry, with expertise spanning data governance, AI ethics, digital transformation, real time use of data and public service delivery. A primary focus will be on identifying opportunities for leveraging AI to enhance decision-making, improve efficiency, and unlock value from public sector data assets.

"This work will contribute to the development of a Regional Strategy for Research and Innovation."[35]

It is particularly notable that the current Executive work is heavily grounded in the needs for strong governance and clear ethics.

As set out across this paper, there is a strong case for the development of a wider, overarching strategy relating to the use of Artificial Intelligence in Northern Ireland, recognising its cross-cutting nature across government, mapping out policy dependencies, mobilising the full suite of policy levers, and recognising implications for economy and wider society. This would be consistent with the approach taken for example in both Scotland and Ireland.

Such a strategy should be accompanied by an action plan, with specific measures and targets. Given the urgency involved, the creation of a strategy should not pause or negate existing or new actions and should, in due course, encompass these pre-existing measures.

A number of initiatives in relation to Artificial Intelligence have already been undertaken in Northern Ireland. Many of these can serve as building blocks for the current work of the Executive and for subsequent wider strategies.

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35   https://aims.niassembly.gov.uk/questions/printquestionsummary.aspx?docid=430050 {Accessed 19 May 2025]

In 2017, within its consultation on an Industrial Strategy for Northern Ireland, the Department for the Economy set out its intention to:

"Develop a strategy focused on making Northern Ireland a pioneering region in capitalising on emerging artificial intelligence, robotics, automation technologies and internet of things"[36]

With the absence of the devolved institutions for several years, this commitment was not enacted.

Matrix, the Northern Ireland Science Industry Panel, which advises government, has produced a range of relevant reports.

In 2019, Matrix issued a report setting out the case for the establishment of an Artificial Intelligence Centre of Excellence in Northern Ireland, bringing together the strengths within local universities.[37] Subsequently, in 2021, Matrix published a report "Evaluation of sector opportunities for AI in NI".[38] These reports laid the groundwork for the creation of the Artificial Intelligence Collaboration Centre (AICC), which is explored further below.

Matrix is currently undertaking a project on AI and the future of work.[39] In a response to a question in the NI Assembly, Minister for Economy Caoimhe Archibald outlined:

"As part of the ongoing foresight work of the MATRIX panel to inform and advise my Department, it will be commissioning research to look at Artificial Intelligence and the future of work in the North. The results of the research are expected to be published this autumn."[40]

The Artificial Intelligence Collaboration Centre was formally established in 2024. The AICC is a £16.3 million initiative by Ulster University and Queen's University Belfast, backed by Invest NI and the Department for the Economy. It links academia, industry and government and promotes AI awareness and adoption among businesses in Northern Ireland, with a strong emphasis on ethical and responsible innovation. The AICC offers fully-funded, hands-on support, and skilling opportunities. It seeks to establish Northern Ireland as a global leader in AI-driven innovation across key sectors.[41]

36   Department for the Economy, Economy 2030: A consultation on an Industrial Strategy for Northern Ireland www.economy-ni.gov.uk/sites/default/files/consultations/economy/industrial-strategy-ni-consultation-document.pdf [Accessed 21 May 2025] p.34

37   Artificial Intelligence Centre of Excellence in Northern Ireland, 2019 https://matrixni.org/documents/artificial-intelligence-research-in-northern-ireland/?portfolioCats=162 [Accessed 21 May 2025]

38   Evaluation of sector opportunities for AI in NI, 2021, matrixni.org/wp-content/uploads/2021/02/AI-Sector-Foresight-Report.pdf [Accessed 21 May 2025]

39   https://matrixni.org/about/current-work/ [Accessed 22 May 2025]

40   AQW 24009/22-27 Answered On Date: 18/03/2025

41   Artificial Intelligence Collaboration Centre [Accessed 22 May 2025]

In September 2024, the then Economy Minister Conor Murphy launched a Digital Skills Action Plan for 2024-34. This plan is designed to nurture and support digital skills over the next decade by creating alternative pathways into the digital sector, with a particular focus on underrepresented groups. The goal is to transform Northern Ireland into a world-leading digital hub, boosting the economy and providing more job opportunities.[42]

So far within the Northern Ireland public sector, the adoption of AI has been relatively slow and piecemeal. In January 2024, Agenda NI reported the exploration of AI adoption within a minority of Departments in terms of civil service business. This is a sub-section of overall use within the public sector.[43] However, matters have progressed significantly since then. A number of projects are under development and the pace of progress is accelerating.

In June 2023, the Northern Ireland Civil Service (NICS) published guidance, entitled "NICS Use of Generative AI" for civil service staff. Whilst there may be a rationale for this in terms of protecting the integrity of process, Northern Ireland's guidance is more restrictive than for example the equivalent in Scotland.[44]

AI-related projects, alongside wider digital initiatives, have been central to the first tranche of bids under the public sector transformation fund available to the Executive as part of the financial package provided by the UK Government at the time of the restoration of political institutions in February 2024. Of the 29 projects being taken forward for further consideration by the interim Public Service Transformation Board,18 were digital in nature.[45] These are being considered further and collectively as a part of a Digital Landscape Review.

However, innovation, including the adoption of AI within the civil service and across the public sector, should not be confined to within the remit and resources of the Transformation Fund.

42   www.economy-ni.gov.uk/sites/default/files/publications/economy/Digital-Skills-Action-Plan-2024-2034.pdf [Accessed 22 May 2025]

43   Agenda NI, AI in the public sector, January 2024, www.agendani.com/ai-in-the-public-sector/ [Accessed 21 May 2025]

44   www.gov.scot/binaries/content/documents/govscot/publications/foi-eir-release/2023/10-d/which-scottish-government-directorates-artificial-intelligence-in-whatever-technical-form-is-used-to-support-the-development-of-policy-foi-release/documents/draft-guidance-to-civil-servants-on-generative-ai/draft-guidance-to-civil-servants-on-generative-ai/govscot%3Adocument/Draft%2BGuidance%2Bto%2BCivil%2BServants%2Bon%2BGenerative%2BAI.pdf [Accessed 21 May 2025]

45   Committee for Finance, Official Report (Hansard) Interim Public-sector Transformation Board: Executive Office; Department of Finance, 23 October 2024, https://data.niassembly.gov.uk/HansardXml/committee-34190.pdf [Accessed 3 January 2025]

In February 2025, Finance Minister John O'Dowd, in response to an Assembly Question stated:

"My Department has been taking forward a number of small-scale proof-of-value projects to examine the use of AI in a measured way in order to understand how the technology can deliver value in the public sector. I am aware that other Departments are utilising AI to assist with the delivery of their services and that others are beginning to pilot and test the value of AI adoption. My Department has established an AI working group that is made up of digital leaders from across Departments to share emerging findings and take on board learnings, including those from other jurisdictions."[46]

The use of Artificial Intelligence in the public sector in Northern Ireland and further afield is explored in much greater detail in Part 4 of this report.

1.3.2 Rationale for a bespoke NI AI Strategy and Action Plan

There is an argument for expanding the current work of the Executive from a strategy and action plan largely focused on the public sector to the development of an Artificial Intelligence Strategy for Northern Ireland. This could address public policy interventions to manage deployment and innovation across both the public and private sectors, and to consider policies required to assist the key supporting drivers of change around data, skills and education, and infrastructure. A Strategy would better reflect the cross-cutting reality of AI for the Executive, and map out policy dependencies.

Any such Strategy would need to be accompanied by a revised Action Plan. Devising strategy should happen in parallel with existing and other work, and in due course provide a more comprehensive framework.

The purpose of such a Strategy, as with other strategies, is to provide a framework that better reflects existing baselines of activities and to mobilise the necessary policies, practices and resources to maximise opportunities and minimise risks.

The rationale for a Northern Ireland strategy can be derived from both a bottom-up assessment of the issues and their relative importance, and also a comparative analysis of the public policy frameworks that have been put in place or are in the process of being devised and/or renewed in other regions.

Globally, there is an emerging imperative for governments to have up-to-date digital strategies including artificial intelligence or to have a standalone AI strategy.

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46   Assembly Hansard 17 February 2025,
      aims.niassembly.gov.uk/officialreport/report.aspx?&eveDate=2025/02/17&docID=427947

There are different understandings of the scope of potential AI strategies. Some may be narrowly focused on government adoption, whilst others may look more broadly at economic and societal opportunities and challenges. The Brookings Institution has undertaken a detailed review of 34 different national strategies.[47]

Notably, the AI Strategies in both Scotland[48] and Ireland[49] take a more comprehensive approach. These are further explored later in this document.

Aspects that could be included in this wider approach include boosting a flourishing private AI sector, supporting and maximising innovation, developing and sustaining the related skills pipeline, providing the supporting infrastructure, and considering the resultant ethical issues, whilst balancing associated risks and concerns.

It is arguably not sufficient for Northern Ireland to come under the UK's current AI Opportunities Action Plan.[50] Even if a one-size fits all approach was viable, i.e. with no particular case for variation in policy across the UK, considerable aspects of that plan would nevertheless require action at a Northern Ireland government level. Many of the relevant policy levers lie partially or entirely within the devolved space, including education and skills, and infrastructure issues regarding planning, energy connections and access to water.

Some additional local issues include the potential reliance on smaller data sets and greater risk of bias, the equality and human rights framework, and the full or partial applicability of the EU AI Act.

Therefore, while the UK AI Opportunities Action Plan is designed to benefit the entire UK, including Northern Ireland, its implementation across different regions depends on local governance and regulatory frameworks. Nevertheless, any local strategy would need to be aligned with UK and Irish strategies.

We have reviewed the AI Opportunities Action Plan to reflect those areas where full responsibility for delivery lies at UK national level, those that fall primarily or exclusively in the devolved space and those that are shared:

47   Brookings Institution, A cluster analysis of national AI strategies, December 2023,
      https://www.brookings.edu/articles/a-cluster-analysis-of-national-ai-strategies/?utm= [Accessed 21 May 2025]

48   Scotland's AI Strategy, 2021, www.scotlandaistrategy.com/ [Accessed 21 May 2025]

49   Department of Enterprise, Trade and Employment, National AI Strategy Refresh 2024, November 2024,
      enterprise.gov.ie/en/publications/national-ai-strategy-refresh-2024.html [Accessed 21 May 2025]

50   UK Government, AI Opportunities Action Plan, January 2025,
      https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan
      [Accessed 21 May 2025]

44

Recommendation	Responsibility
Set out, within 6 months, a long-term plan for the UK's AI infrastructure needs, backed by a 10-year investment commitment.	Shared
Expand the capacity of the AI Research Resource (AIRR) by at least 20x by 2030, starting within 6 months.	Shared
Strategically allocate sovereign compute by appointing mission-focused "AIRR programme directors" with significant autonomy.	UKG
Establish 'AI Growth Zones' (AIGZs) to facilitate the accelerated build out of AI data centres.	Shared
Mitigate the sustainability and security risks of AI infrastructure, while positioning the UK to take advantage of opportunities to provide solutions.	UKG
Agree international compute partnerships with like-minded countries to increase the types of compute capability available to researchers and catalyse research collaborations.	UKG
Rapidly identify at least 5 high-impact public datasets it will seek to make available to AI researchers and innovators.	Shared
Strategically shape what data is collected, rather than just making data available that already exists.	Shared
Develop and publish guidelines and best practices for releasing open government datasets which can be used for AI, including on the development of effective data structures and data dissemination methods.	Shared
Couple compute allocation with access to proprietary data sets as part of an attractive offer to researchers and start-ups choosing to establish themselves in the UK and to unlock innovation.	Shared
Build public sector data collection infrastructure and finance the creation of new high-value datasets that meet public sector, academia and startup needs.	Shared
Actively incentivise and reward researchers and industry to curate and unlock private datasets.	Shared
Establish a copyright-cleared British media asset training data set, which can be licensed internationally at scale.	Shared
Accurately assess the size of the skills gap.	Shared, but primary responsibility lies within devolved space

Recommendation	Responsibility
Support Higher Education Institutions to increase the numbers of AI graduates and teach industry-relevant skills.	Shared, but primary responsibility lies within devolved space
Increase the diversity of the talent pool.	Shared, but primary responsibility lies within devolved space
Expand education pathways into AI.	Shared, but primary responsibility lies within devolved space
Launch a flagship undergraduate and masters AI scholarship programme on the scale of Rhodes, Marshall, or Fulbright for students to study in the UK.	Shared
Ensure lifelong skills programme is ready for AI.	Shared, but primary responsibility lies within devolved space
Establish an internal headhunting capability on a par with top AI firms to bring a small number of elite individuals to the UK.	UKG
Explore how the existing immigration system can be used to attract graduates from universities to producing some of the world's top AI talent.	UKG
Expand the Turing AI Fellowship offer.	UKG
Continue to support and grow the AI Safety Institute (AISI) to maintain and expand its research on model evaluations, foundational safety and societal resilience research.	Primarily UKG, but also opportunities within devolved space
Reform the UK text and data mining regime so that it is at least as competitive as the EU.	UKG
Commit to funding regulators to scale up their AI capabilities, some of which need urgent addressing.	UKG
Ensure all sponsor departments include a focus on enabling safe AI innovation in their strategic guidance to regulators.	UKG
Work with regulators to accelerate AI in priority sectors and implement pro-innovation initiatives like regulatory sandboxes.	UKG

Recommendation	Responsibility
Require all regulators to publish annually how they have enabled innovation and growth driven by AI in their sector.	UKG
Support the AI assurance ecosystem to increase trust and adoption by: • Investing significantly in the development of new assurance tools, including through an expansion to AISI's systemic AI safety fast grants programme, to support emerging safety research and methods. • Building government-backed high-quality assurance tools that assess whether AI systems perform as claimed and work as intended.	Shared
Consider the broader institutional landscape and the full potential of the Alan Turing Institute to drive progress at the cutting edge, support the government's missions and attract international talent.	Primarily UKG
Appointing an AI lead for each mission to help identify where AI could be a solution within the mission setting, considering the user's needs from the outset.	UKG
A technical, cross-government, technical horizon scanning and market intelligence capability who understands AI capabilities and use-cases as they evolve to work closely with the mission leads and maximise the expertise of both.	UKG
Two-way partnerships with AI vendors and startups to anticipate future AI developments and signal public sector demand.	Shared
Consistent use of a framework for how to sourcing AI – whether to build in-house, buy, or run innovation challenges – that evolves over time, given data, capability, industry contexts and evaluation of what's worked.	Shared
A rapid prototyping capability that can be drawn on for key projects where needed, including technical and delivery resource to build and test proof of concepts, leveraging in-house AI expertise, together with specialists in design and user experience.	Shared
Specific support to hire external AI talent.	Shared
A data-rich experimentation environment including a streamlined approach to accessing data sets, access to language models and necessary infrastructure like compute.	Shared
A faster, multi-stage gated and scaling AI procurement process that enables easy and quick access to small-scale funding for pilots and only layers bureaucratic controls as the investment-size gets larger.	Shared

Recommendation	Responsibility
A scaling service for successful pilots with senior support and central funding resource.	Shared
Mission-focussed national AI tenders to support rapid adoption across de-centralised systems led by the mission delivery boards.	Shared
Development or procurement of a scalable AI tech stack that supports the use of specialist narrow and large language models for tens or hundreds of millions of citizen interactions across the UK.	Primarily UKG
Mandating infrastructure interoperability, code reusability and open sourcing.	Shared
Procure smartly from the AI ecosystem as both its largest customer and as a market shaper.	Shared
Use digital government infrastructure to create new opportunities for innovators.	Shared
Publish best-practice guidance, results, case-studies and open-source solutions through a single "AI Knowledge Hub".	Shared
In the next 3 months, the Digital Centre of Government should identify a series of quick wins to support the adoption of the scan, pilot scale approach and enable public and private sector to reinforce each other.	Shared
Leverage the new Industrial Strategy. The development of a new Industrial Strategy presents an opportunity to drive collective action to support AI adoption across the economy.	Primarily UKG
Appoint AI Sector Champions in key industries like the life sciences, financial services and the creative industries to work with industry and government and develop AI adoption plans.	UKG
Drive AI adoption across the whole country.	Shared
Create a new unit, UK Sovereign AI, with the power to partner with the private sector to deliver the clear mandate of maximising the UK's stake in frontier AI.	Primarily UKG

The UK's AI Opportunities Action Plan provides a roadmap for the Executive with respect to what steps need to be taken. However, the Executive could – and should – develop a more tailored local approach.

Recommendations

- The Executive should consider expanding the remit of the current work on an AI Action Plan, currently primarily focused upon the public sector, to a much more comprehensive and cross-cutting AI Strategy for Northern Ireland. This should span a range of relevant socio-economic considerations and reflect policy interdependencies and key drivers.

- It may also be important to undertake a full review of the UK's AI Opportunities Action Plan to determine actions that partially or fully fall under the devolved remit and address any areas of divergence or omission.

- Northern Ireland's AI Strategy should be closely aligned with the Programme for Government and Investment Strategy for Northern Ireland.

Part 2
Comparative Analysis & Key Learnings for NI

Part 2: Comparative Analysis & Key Learnings for NI

2.1 International AI Policy & Governance

This section of the paper highlights comparative international policy relating to AI and seeks to identify areas of best practice and draw out a series of associated recommendations for Northern Ireland policymakers.

2.1.1 Global Overview

There is no agreed system of global governance for Artificial Intelligence. However, a number of international bodies and NGOs have set out a range of guidance and principles on governance, ethics, and best practice for public sector delivery.[51]

AI is regulated and risks are managed or mitigated via varying approaches across different national jurisdictions. The presence of differing approaches creates externalities, often negative.

Three major global players, namely China, the United Stated and the European Union, have the scope to set global standards.[52] At present, the UK is rated third internationally for scale of adoption and innovation of AI.[53]

Given the current tensions within geopolitics, the immediate prospects of a singular global approach to AI governance seem unlikely. Other areas in which collective international interventions are required and already exist, such as addressing climate change, are experiencing considerable difficulties.

Furthermore, AI regulation has become contested within an increasingly uncertain and unstable geopolitical situation. For example, concessions on AI standards, including online safety protections, may be demanded in exchange for mitigations on tariffs from the Trump Administration.

A global governance approach should ultimately include common frameworks and approaches to the development and regulation of AI, particularly in relation to managing and addressing risks. This could include the development of a Global AI Treaty and the creation of a new international organisation within the United Nations system. Obvious areas of collaboration lie in mitigating risks and managing matters such as copyright and intellectual property.

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51   Carnegie Endowment, AI Governance Arms Race: From Summit Pageantry to Progress?, October 2024, carnegieendowment.org/research/2024/10/the-ai-governance-arms-race-from-summit-pageantry-to-progress?lang=en [Accessed 21 May 2025]

52   All Tech, The Global AI Race: How Countries Are Competing for Dominance, September 2024, https://alltechmagazine.com/the-global-ai-race/ [Accessed 21 May 2025]

53   AI Opportunities Action Plan, published by gov.uk, January 2025, https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan [Accessed 21 May 2025]

2.1.2 United Nations System Actions

In 2023, in an attempt to foster a globally inclusive approach, the UN Secretary-General convened a multi-stakeholder high-level Advisory Body on AI to undertake analysis and advance recommendations for international governance.[54]

The United Nations Children's Fund (UNICEF) has produced policy guidance around AI in relation to children. It sets out nine key principles:[55]

- **Best interests of the child**: AI systems should prioritize the best interests of children in their design, development, and deployment.

- **Inclusion**: AI should be inclusive and accessible to all children, including those from marginalized or vulnerable groups.

- **Non-discrimination and fairness**: AI systems must avoid biases and discrimination, ensuring fairness for all children regardless of background.

- **Safety and protection**: Children must be protected from potential harms related to AI, including physical, emotional, and psychological risks.

- **Privacy**: Children's data must be protected, and AI systems should uphold children's right to privacy.

- **Transparency**: AI systems should be understandable and explainable to children, caregivers, and stakeholders.

- **Accountability**: Clear mechanisms should exist to ensure those responsible for AI systems are held accountable for their impacts on children.

- **Empowerment**: AI should empower children and support them in learning, development, and self-expression.

- **Sustainability**: AI development should consider long-term impacts on children and future generations, including environmental and social sustainability.

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) AI Ethics Framework (2021) provides an agreement on AI ethics adopted by 193 countries, focusing on transparency, accountability, and fairness.[56] The International Telecommunication Union (ITU) runs annual AI for Good summits[57].

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54 AI Advisory Body, United Nations,
    www.un.org/sites/un2.un.org/files/governing_ai_for_humanity_final_report_en.pdfgoverning_ai_for_humanity_final_report_en.pdf [Accessed 22 May 2025]
55 UNICEF-Global-Insight-policy-guidance-AI-children-2.0-2021.pdf [Accessed 22 May 2025]
56 UNESCO Ethics of Artificial Intelligence www.unesco.org/en/artificial-intelligence/recommendation-ethics [Accessed 21 May 2025]
57 https://aiforgood.itu.int/summit25/ [Accessed 22 May 2025]

In September 2024, world leaders convened in New York for the Summit of the Future, where they adopted a Pact for the Future that includes a Global Digital Compact. This is a comprehensive global framework for digital cooperation and governance of artificial intelligence.[58]

2.1.3 Other AI Governance Frameworks

Hiroshima AI Process

At the G7 Leader's Summit in Japan in May 2023, the G7 Hiroshima AI Process was launched. Subsequently, the "Hiroshima AI Process Comprehensive Policy Framework" was developed, including guiding principles and code of conduct aimed at promoting the safe, secure and trustworthy advanced AI systems. This was subsequently endorsed by G7 Leaders in December[59].

Council of Europe Framework Convention on Artificial Intelligence

The first treaty regarding AI Governance was reached by the Council of Europe in September 2024. Under the Framework Convention on Artificial Intelligence, activities within the lifecycle of AI systems must comply with the following fundamental principles:

• Human dignity and individual autonomy

• Equality and non-discrimination

• Respect for privacy and personal data protection

• Transparency and oversight

• Accountability and responsibility

• Reliability

• Safe innovation

Signatories include the European Union, United Kingdom and the United States (in an observer capacity).[60]

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58   United Nations, Global Digital Compact, https://www.un.org/digital-emerging-technologies/global-digital-compact [Accessed 21 May 2025]

59   Hiroshima AI Process. www.soumu.go.jp/hiroshimaaiprocess/en/index.html, [Accessed 21 May 2025]

60   Council of Europe, Framework Convention on Artificial Intelligence www.coe.int/en/web/artificial-intelligence/the-framework-convention-on-artificial-intelligence [Accessed 21 May 2025]

AI Safety Summits

The first AI Safety Summit was held in 2023 at Bletchley Park in the UK. It was attended by representatives of the US, EU and China alongside many prominent AI companies plus academic and civil society voices. The Bletchley Declaration emphasised that AI should be developed and deployed in a manner that is safe, human-centric, trustworthy, and responsible, acknowledging potential catastrophic risks such as misuse in warfare, terrorism, and societal disruption.[61]

At a follow up AI Safety Summit in Seoul in 2024, a range of companies agreed a number of voluntary commitments framed as Frontier AI Safety Commitments:[62]

- Organisations effectively identify, assess and manage risks when developing and deploying their frontier AI models and systems.

- Organisations are accountable for safely developing and deploying their frontier AI models and systems.

- Organisations' approaches to frontier AI safety are appropriately transparent to external actors, including governments.

Ahead of the 2025 Paris AI Safety Summit, a group of 96 AI experts produced the first International AI Safety Report, providing scientific information intended to support informed policymaking.[63] This report is explored later in this document in the section encompassing risk.

However, at the formal summit, the resultant Paris declaration was not signed by the USA and UK, citing concerns regarding regulation and implications for national security, respectively.[64]

61   UK Government, The Bletchley Declaration by Countries Attending the AI Safety Summit, 1-2 November 2023 www.gov.uk/government/publications/ai-safety-summit-2023-the-bletchley-declaration/the-bletchley-declaration-by-countries-attending-the-ai-safety-summit-1-2-november-2023 [Accessed 21 May 2025]

62   UK Government, Frontier AI Safety Commitments, AI Seoul Summit 2024, www.gov.uk/government/publications/frontier-ai-safety-commitments-ai-seoul-summit-2024/frontier-ai-safety-commitments-ai-seoul-summit-2024 [Accessed 21 May 2025]

63   International AI Safety Report, assets.publishing.service.gov.uk/media/679a0c48a77d250007d313ee/International_AI_Safety_Report_2025_accessible_f.pdf [Accessed 21 May 2025]

64   Dr SeánÓ hÉigeartaigh, What Comes After the Paris AI Summit?, RUSI, https://www.rusi.org/explore-our-research/publications/commentary/what-comes-after-paris-ai-summit, March 2025 [Accessed 21 May 2025]

OECD Activities

The Organisation for Economic Co-operation and Development (OECD) continues to play a leading role in establishing principles regarding governance and ethics. It has articulated the key principles regarding Artificial Intelligence as:[65]

- Inclusive growth, sustainable development and well-being

- Human rights and democratic values, including fairness and privacy

- Transparency and explainability

- Robustness, security and safety

- Accountability

The OECD has also published a wide range of policy and practice guidance in relation to trust, ethics and policy application within the public sector. Many of these are referenced later in this document. A notable asset in this regard is the OCED Policy Observatory, which is an open-access repository of over a thousand AI policy initiatives, tools and data from around the world.[66]

Finally, the World Economic Forum is partnering with VivaTech to establish a European Centre for AI Excellence.[67]

2.1.4 Other Key Jurisdictions

AI Governance and Developments in United States

AI governance and regulation is in a state of flux in the United States, particularly with the transition from the Biden to Trump Administration and associated differences in policy approaches.

A number of initiatives to either drive innovation or create regulation have been taken forward at both the federal and state level in the United States.

In October 2023, President Biden issued an Executive Order requiring AI developers to share safety results with the U.S. government. Additionally, the establishment of an American AI Safety Institute, as part of the National Institute of Standards and Technology, was announced to further AI safety research and standards.[68]

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65 OCED AI Principles Overview, March 2024, oecd.ai/en/ai-principles [Accessed 21 May 2025]

66 OCED, Policies, data and analysis for trustworthy artificial intelligence, oecd.ai/en/ [Accessed 21 May 2025]

67 World Economic Forum, World Economic Forum to Launch European Centre for AI Excellence in Paris, Feburary 2025, www.weforum.org/press/2025/02/world-economic-forum-to-launch-european-centre-for-ai-excellence-in-paris/ [Accessed 21 May 2025]

68 govwhitepapers.com/whitepapers/highlights-of-the-2023-executive-order-on-artificial-intelligence-for-congress [Accessed 22 March 2025]

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

The 2024 White House Summit on AI focused on aligning AI innovation with national priorities, including economic growth and ethical considerations.

US AI Strategy has been based on fostering a culture of innovation, cutting-edge research and workforce innovation. A lighter-touch approach has been taken to regulation compared to the European Union. Further, the 2022 Chips and Science Act boosted semiconductor production and R&D.

In January 2025, Open AI, Softbank and Oracle announce that they are collaborating on a $500 billion initiative around AI infrastructure.[69]

However, the Trump Administration has adopted a policy change, and scrapped the Biden Administration AI Safety Accords. Instead, it has launched a consultation on a new AI Action Plan.[70]

Whilst the United States has hitherto been the global leader in AI development in terms of scale – although not necessarily in intensity – this position is increasingly challenged by China.[71]Furthermore, the Trump Administration's tariffs on China and others may hinder the development of AI by complicating the importation of tech components into the USA.[72]

Developments in China

China is actively competing with the United States in terms of dominance in AI.[73] The "New Generation Artificial Intelligence Development Plan," launched in 2017, set out a strategy to make China a global leader in AI by 2030.[74] It is emerging as the biggest provider or AI research, patents and talent.[75] It remains behind the USA in terms of innovation and production of AI models. However, the January 2025 release of Deepseek may become a pivotal moment[76].

69   Open AI, openai.com/index/announcing-the-stargate-project/ [Accessed 21 May 2025]
70   https://www.whitehouse.gov/briefings-statements/2025/02/public-comment-invited-on-artificial-intelligence-action-plan/ [Accessed 22 May 2025]
71   https://observer.co.uk/data/global-ai?#rankings September 2024, [Accessed 22 May 2025]
72   https://www.washingtonpost.com/technology/2025/04/12/tariffs-trump-threaten-silicon-valley-ai/ [Accessed 22 May 2025]
73   All Tech, The Global AI Race: How Countries Are Competing for Dominance, alltechmagazine.com/the-global-ai-race/?#us-vs-china-a-battle-for-supremacy [Accessed 21 May 2025]
74   Stanford University, Full Translation: China's 'New Generation Artificial Intelligence Development Plan', 2017, digichina.stanford.edu/work/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017/ [Accessed 21 May 2025]
75   Times Higher Education, Can China's universities power it to victory in the global AI race? March 2025, https://www.timeshighereducation.com/depth/can-chinas-universities-power-it-victory-global-ai-race [Accessed 21 May 2025]
76   BBC DeepSeek: The Chinese AI app that has the world talking, 27 January 2025, www.bbc.co.uk/news/articles/c5yv5976z9po [Accessed 21 May 2025]

Notably, the Ministry of Education in China has announced plans to integrate AI into all levels of its educational system as a means of embedding this technology across all skills levels.[77]

European Union (EU)

The European Union is a major global player in AI, not least due to the scale of its single market. EU policy is co-ordinated by the European AI Office within the Commission and lies at the heart of a single EU approach to AI governance and regulation, and supports member states with their own policies and governance.[78] The European Union first put in place a Co-ordinated Plan on Artificial Intelligence in 2018.[79]

Competitiveness issues across the EU were identified in the 2024 Draghi Report, officially titled *"The Future of European Competitiveness"*.[80] This includes a recognition that the EU is lagging behind the United States and China in AI. This gap is attributed to underinvestment, fragmented digital infrastructure, and regulatory complexities that hinder innovation. This stresses the need for scalability in terms of data sharing, reviewing the regulatory environment and investment in research.

In April 2025, the European Commission released the AI Continent Action Plan which seeks to make Europe a global leader. The plan includes actions to build large-scale AI data and computing infrastructures, increase access to high-quality data, foster AI adoption in strategic sectors, strengthen AI skills and talent, and facilitate the implementation of the AI Act. Key components include the establishment of AI Gigafactories, the Invest AI facility to stimulate private investment and the launch of the AI Skills Academy.[81] Currently, the AI Office is conducting a consultation on its Apply AI Strategy. This is intended to make the EU a global leader in AI innovation.[82]

The European Union adopts a stronger approach to AI regulation than many other jurisdictions. There are mixed views on this approach. Some may argue that it impedes the scope for innovation. Others will point to public trust being key to building and sustaining developments in AI, and that effective regulation will be central to that.

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77 Reuters, China to rely on artificial intelligence in education reform bid, 17 April 2025, www.reuters.com/world/asia-pacific/china-rely-artificial-intelligence-education-reform-bid-2025-04-17/?utm [Accessed 21 May 2025]

78 European AI Office, https://digital-strategy.ec.europa.eu/en/policies/ai-office [Accessed 21 May 2025]

79 European Commission, Coordinated Plan on Artificial Intelligence, digital-strategy.ec.europa.eu/en/policies/plan-ai [Accessed 21 May 2025]

80 European Commission, the Draghi report on EU competitiveness, September 2025 commission.europa.eu/topics/eu-competitiveness/draghi-report_en [Accessed 22 May 2025]

81 European Commission, AI Continent Action Plan, digital-strategy.ec.europa.eu/en/factpages/ai-continent-action-plan [Accessed 21 May 2025]

82 European Commission, digital-strategy.ec.europa.eu/en/consultations/commission-launches-public-consultation-and-call-evidence-apply-ai-strategy [Accessed 21 May 2025]

The EU AI Act (2024) seeks to provide a comprehensive approach to managing risks and regulations for what are deemed to be high-risk systems and applications. This should ensure protection of the fundamental rights of EU citizens and provide a framework for businesses.[83] Actors that breach the Act can be subject to significant financial penalties.

Summary of the EU AI Act

Objectives of the AI Act:

- Ensure AI in the EU is aligned with fundamental rights, such as privacy and non-discrimination.

- Build public trust in AI systems.

- Create a single framework to prevent regulatory fragmentation across member states.

There are four categories of risk:

- Unacceptable Risk: AI systems deemed harmful, such as those violating fundamental rights are banned.

- High Risk: AI systems in sensitive areas like healthcare, law enforcement, transportation, and education are subject to strict oversight.

- Limited Risk: AI systems that interact with people, such as chatbots, require transparency measures.

- Minimal Risk: Most AI systems fall into this category and are largely unregulated.

Practices that pose significant threats to safety, livelihoods, and rights are prohibited, including:

- Real-time, remote, biometric identification in public spaces (with some exceptions like national security).

- Subliminal techniques to manipulate individuals.

- Exploiting vulnerabilities of specific groups, such as children or persons with disabilities.

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83   artificialintelligenceact.eu/ [Accessed 22 May 2025]

High-risk systems must comply with strict guidelines, including:

- Risk management systems.

- Documentation for transparency and accountability.

- Human oversight mechanisms.

- High-quality datasets to minimise bias.

The EU AI Act was approved in early 2024, and the first provisions entered into force in August 2024. EU member states and partners in the European Economic Area are working to align national regulations with the Act and to name authorities to oversee and enforce it. The Act comes into full effect this year. The EU may be reconsidering some aspects of the EU Act, including the requirements on some small businesses or start-ups.[84]

Any companies placing AI products on the EU market need to comply with the terms of the EU Act. This includes businesses located in Northern Ireland.

Beyond this general, extra-territoriality provision, at present, some elements of the EU AI Act apply to Northern Ireland via Article 13(3) of the Windsor Framework.[85] The European Commission is currently proposing to fully apply the EU AI Act to Northern Ireland via Article 13(4) of the Windsor Framework, subject to agreement in the Joint Committee.[86] At the time of publication, the UK Government has opted to delay discussion of this proposal for six weeks.[87]This is considered in more detail in the Regulation section of this paper.

Recommendation

- **International principles and best practice should inform development of an AI Strategy and Action Plan in Northern Ireland, embedding best practice on ethics, transparency and safeguards, in order to build and sustain public trust and support.**

84   Reuters, Europe wants to lighten AI compliance burden for startups, 8 April 2025
      www.reuters.com/world/europe/europe-wants-lighten-ai-compliance-burden-startups-2025-04-08/
      [Accessed 21 May 2025]

85   uk-government-explanatory-memorandum-17-july-2024.pdf
      committees.parliament.uk/publications/46798/documents/240857/default/ [Accessed 22 May 2025]

86   Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down
      harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013,
      (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU)
      2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (Text with EEA relevance) https://eur-
      lex.europa.eu/eli/reg/2024/1689/oj/eng [Accessed 21 May 2025]

87   Register of Commission Documents - COM(2025)118

2.2 AI Developments in the United Kingdom

2.2.1 UK-wide Policy

The UK is the third largest economy in the world in terms of AI capacity, if not intensity – just ahead of France, Germany and India. However, both the United States and China have a substantial lead.[88] Furthermore, the UK faces challenges to maintain this competitive position as other nations upscale.

There has been a broad range of academic, business and governmental interest and activities undertaken in relation to Artificial Intelligence across the UK. UK universities, including Ulster University and Queen's University, have established a strong track record in AI related research. Significant aspects of this relate to Northern Ireland and other devolved administrations. However, some of the activity relates only to England, thus highlighting the need for corresponding actions in Scotland, Wales and Northern Ireland.

In 1950, Alan Turing first published *"Computing Machinery and Intelligence"*, introducing the Turing Test.[89] This defines the test as production of intelligent behaviour that is indistinguishable from a human.

In terms of recent developments in the UK, an independent review carried out in 2017 by Professor Dame Wendy Hall and Jérôme Pesenti, entitled *"Growing the Artificial Intelligence Industry in the UK"*, identified recommendations relating to, amongst other factors, data, innovation and skills.[90]

In 2018, the UK Government announced the AI Sector Deal, committing £1 billion to AI development, and in 2019 the Office for AI was established to oversee policy and strategy. The UK launched its National AI Strategy in 2021 to position itself as a global leader. This strategy indicated that the UK public sector will lead the way, by setting an example for the safe and ethical deployment of AI via its own governance of the technology.[91]

88   https://observer.co.uk/data/global-ai?#rankings September 2024

89   Turing, A.M. (1950). Computing machinery and intelligence. Mind, 59, 433-460, efaidnbmnnnibpcajpcglclefindmkaj/https://www.cs.ox.ac.uk/activities/ieg/e-library/sources/t_article.pdf [Accessed 21 May 2025]

90   Independent report, Growing the artificial intelligence industry in the UK, published on gov.uk, October 2017, https://www.gov.uk/government/publications/growing-the-artificial-intelligence-industry-in-the-uk [Accessed 21 May 2025]

91   UK Government, National AI Strategy, 2021, https://www.gov.uk/government/publications/national-ai-strategy [Accessed 21 May 2025]

Rishi Sunak hosted the first AI Safety Summit at Bletchley Park in 2023. This was followed by the establishment, in November 2023, of the UK AI Safety Institute, which is dedicated to evaluating and ensuring the safety of advanced AI models, positioning the UK as a global leader in this respect.[92] This has now been rebranded as the AI Security Institute.[93]

The UK's recent AI Opportunities Action Plan was commissioned by the Secretary of State for Science, Innovation and Technology, Peter Kyle, in July 2024. He appointed tech entrepreneur Matt Clifford to develop the plan. This was published on 13 January 2025 and accepted by the Government. The plan covers a broad range of issues including skills and infrastructure requirements, attraction of talent, and adoption and innovation in both the public and private sectors.[94]

In the foreword, Peter Kyle sets out the purpose of the plan:[95]

> *"Our ambition is to shape the AI revolution on principles of shared economic prosperity, improved public services and increased personal opportunities so that:*
>
> - *AI drives the economic growth on which the prosperity of our people and the performance of our public services depend;*
>
> - *AI directly benefits working people by improving health care and education and how citizens interact with their government; and*
>
> - *The increasing prevalence of AI in people's working lives opens up new opportunities rather than just threatens traditional patterns of work."*

92   UK Government, Introducing the AI Safety Institute, January 2024, https://www.gov.uk/government/publications/ai-safety-institute-overview/introducing-the-ai-safety-institute [Accessed 21 May 2025]

93   www.aisi.gov.uk/ [Accessed 22 May 2025]

94   UK Government, AI Opportunities Action Plan, January 2025, https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan [Accessed 21 May 2025]

95   UK Government, AI Opportunities Action Plan, January 2025, https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan [Accessed 21 May 2025]

Some key aspects of the AI Opportunities Action Plan

Key requirements for government:

- **Invest in the foundations of AI:** We need world-class computing, data, infrastructure, access to talent and regulation.

- **Push hard on cross-economy AI adoption:** The public sector should rapidly pilot and scale AI products and services and encourage the private sector to do the same. This will drive better experiences and outcomes for citizens, and boost productivity.

- **Position the UK to be an AI maker, not an AI taker:** As the technology becomes more powerful, we should be the best state partner with those building frontier AI. The UK should aim to have true national champions at critical layers of the AI stack so that it benefits economically from AI advancement and has influence on future AI values, safety and governance.

Several core imperatives are set out:

- Be on the side of innovators: In every element of the Action Plan, the government should ask itself: does this benefit people and organisations trying to do new and ambitious things in the UK? If not, we will fail to meet our potential.

- Invest in becoming a great customer: government purchasing power can be a huge lever for improving public services, shaping new markets in AI, and boosting the domestic ecosystem. But doing this well is not easy – it will require real leadership and radical change, especially in procurement.

- Crowd in capital and talent: The UK is a medium-sized country with a tight fiscal situation. We need the best talent around the world to want to start and scale companies here. If we do that, the best investors globally will want to deploy capital here – both into our startups and our AI infrastructure.

- Build on UK strengths and catalytic emerging areas: The UK has strong companies in the AI application and integration layers that are well positioned to grow. We also have emerging areas of research and engineering strength – particularly in AI for science and robotics – that could have a transformational impact across the economy, advance AI and unlock further innovation.

- Sovereign AI compute, owned and/or allocated by the public sector, will enable the UK to quickly and independently allocate compute to national priorities. For example, we need the ability to: drive mission-focused AI research; empower academics and startups to train AI models; and ensure access to AI compute for critical services in times of market disruption. Sovereign AI compute will almost certainly be the smallest component of the UK's overall compute portfolio.

- Domestic compute, which is based within the UK but privately owned and operated and will position the UK as a leading AI economy and ensure the UK's economic security . Due to the criticality of compute for AI, domestic compute will create spillover benefits in the form of jobs, investment and new, AI-based, service businesses. In this part of the portfolio, crowding in private and international capital is critical.

- International compute, accessed via reciprocal agreements and partnerships with like-minded partners, to give the UK access to complementary capabilities and facilitate joint AI research in areas of shared interest. We should proactively develop these partnerships, while also taking an active role in the EuroHPC Joint Undertaking.

The important issue of adoption by the UK Government and related public sector is explored in a later section.

2.2.2 AI Developments in Scotland & Wales

Northern Ireland's fellow devolved jurisdictions are perhaps the most reliable comparator of the types of actions that should be taken in the devolved space to maximise AI adoption and opportunities, and to address associated risks. As in Northern Ireland, both Scotland and Wales are also covered by relevant aspects of UK policy.

Scotland

The Scottish Government first devised an AI Strategy in 2021.[96] It is particularly notable that the strategy encompasses more than just the development and application of AI and considers the wider economy and society. The Strategy states:

> *"We believe the significance of the Strategy lies in the fact that it looks beyond the technology itself to focus more closely on AI's role in our society. Much of what we take for granted today happens because AI is working behind the scenes, driving change and technological innovation on an unprecedented scale. However, the use and adoption of AI should be on our terms if we are to build trust between the people of Scotland and AI."*[97]

This AI Strategy is framed in relation to Scotland's National Performance Framework:

> *"We are focused on creating a more successful country with opportunities for all of Scotland to flourish through increased wellbeing and sustainable and inclusive economic growth."*[98]

The OECD Principles on Artificial Intelligence also underpin the Strategy.[99] Furthermore, the Strategy seeks to follow UNICEF's policy guidance on AI for children, which in turn draws upon the UN Convention on the Rights of the Child.[100]

The strategy has three key pillars:

- The collective leadership of the Scottish AI Alliance

- Creating foundations for success

- Building an AI Powerhouse

The Scottish AI Alliance is tasked with the delivery of the Strategy. The Chair is appointed by a Minister and is supported by Government and the Data Lab. There is a focus on dialogue and collaboration. The Alliance leadership group draws members from across society, including business and academia[101].

In light of the ongoing debate around the sustainability of AI, it is noteworthy that the AI Alliance is sponsoring a People's Panel to discuss AI and Climate Change.[102]

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96   www.scotlandaistrategy.com/
97   Scotland's AI Strategy - Scotland's AI Strategy Executive Summary
98   Scotland's AI Strategy - Scotland's AI Strategy p8
99   Scotland's AI Strategy - Scotland's AI Strategy p20
100 www.unicef.org/innocenti/media/1326/file/UNICEF-Global-Insight-policy-guidance-AI-children-draft-1.0-2020.pdf p21 [Accessed 22 May 2025]
101   www.scottishai.com/ [Accessed 22 May 2025]
102 www.scottishai.com/news/peoples-panel-ai-climate [Accessed 22 May 2025]

A core component of delivery of the Strategy is the Scottish Data Lab:[103]

> *"We foster innovation through collaboration, build skills and grow talent, and champion Scotland's data and AI community. Acting as a catalyst, we use our expertise, network, funding and platforms to change how Scotland, and the world, innovates with data and AI."*

The Data Science and Innovation Accelerator is a programme for public sector organisations in Scotland designed to support the innovative use of data to solve real-world business problems or discover new opportunities.[104]

In recognition of issues around trust and transparency, the Scottish AI Playbook provides:[105]

> *"an open guide to the principles, practices and actions we will adopt to realise our vision. For the first time, everything you need to know about AI in Scotland can be found in one indispensable digital resource."*[106]

The Playbook reports on its activities to date:

> *"The creation of the Scottish AI Playbook has been one of key milestones in the Scottish AI Strategy. Originally envisioned as an open guide, the Playbook sets out the principles, practices, and actions needed to bring Scotland's AI vision to life. Since its launch in March 2022, it has grown into a collaborative hub where contributors from around the world share valuable resources to help users navigate their AI journey.*

> *"As the Playbook continues to evolve, we're focused on delivering the tools, resources, and guidance Scottish businesses and organisations need to implement AI in a trustworthy, ethical, and inclusive way. This Playbook serves as the central resource in a growing collection of publications designed to support you every step of the way."*

The Scottish AI register provides information regarding the deployment of AI by the Scottish Government and within the wider public sector. This seeks to build trust and transparency around processes and the use of data.[107] This is considered later in the public sector section.

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103 thedatalab.com/ [Accessed 22 May 2025]
104 digitalacademy.gov.scot/courses/data-science-innovation-accelerator/ [Accessed 22 May 2025]
105 www.scottishaiplaybook.com/about [Accessed 22 May 2025]
106 *Scotland's AI Strategy - Scotland's AI Strategy p18*
107 scottishairegister.com/ [Accessed 22 May 2025]

Most recently, in its Programme for Government 2025-26, the Scottish Government committed to:

> **Launching AI Scotland, a new national transformation programme founded on a partnership of business, academia, agencies and government, including a national AI adoption programme for SMEs.**[108]

Wales

Wales introduced a Digital Strategy in 2022,[109] which is more broad-based than a dedicated AI strategy.[110]

A very notable aspect of developments in Wales is the social partnership approach to AI related workforce issues.

In December 2024, the Workforce Partnership Council in Wales produced parallel reports regarding AI in the workplace. One report focused on the awareness and understanding of artificial intelligence in the Welsh public sector, and barriers to further adoption.[111] The second report provided guidance to managers, trade unions and other worker representatives on the use of algorithms and artificial intelligence systems in devolved public sector workplaces for the management of staff and their work. However, this is not specific to generative AI.[112]

With regard to this social partnership approach between key stakeholders. Welsh Minister for Social Partnership, Jack Sargeant, stated:

> *"As AI continues to shape the future of our workplaces, it is crucial that public service workers and organisations alike benefit from this continued innovation. Our approach ensures that AI adoption in public services is transparent and underpinned by human oversight. The three key principles reflect our 'Welsh way' of social partnership – collaborative decision-making that prioritises fairness, job security and workforce development. With these resources, we are reaffirming Wales' position as a leader in ethical AI adoption, setting a benchmark for responsible technology management across the public sector."*[113]

108 Scottish Government, Programme for Government 2025 to 2026, 6 May 2025, https://www.gov.scot/publications/programme-government-2025-26 [Accessed 21 May 2025]

109 Welsh Government, "Digital Strategy for Wales", March 2021, https://www.gov.wales/digital-strategy-wales-html [Accessed 3 January 2025]

110 Welsh Government, www.gov.wales/digital-strategy-wales-html, March 2021 [Accessed 21 May 2025]

111 Welsh Partnership Council, "Using artificial intelligence at work", December 2024, www.gov.wales/using-artificial-intelligence-work

112 Welsh Government, Managing technology that manages people: a Social Partnership approach to algorithmic management systems in the Welsh public sector, December 2024 https://www.gov.wales/managing-technology-manages-people-social-partnership-approach-algorithmic-management-systems-welsh [Accessed 21 May 2025]

113 Welsh Government, Wales' public sector leading the way in responsible AI use,19 December 2024, www.gov.wales/wales-public-sector-leading-way-responsible-ai-use [Accessed 21 May 2025]

Recommendations

- The Executive should note the broader reach of the Scottish AI Strategy in terms of recognising the wider implications for economy and society, and its linkages to the Scottish National Performance Framework.

- The Executive should consider the models of the Scottish Data Lab, AI Playbook and Data Science and Innovation Accelerator for NI.

- The Executive should consider Wales' social partnership approach to workforce issues arising from the deployment of AI.

2.3 AI Policy in Ireland

Ireland's first AI Strategy, entitled "AI – Here for Good," was put in place in July 2021. It sought to position Ireland as a global leader in ethical, human-centric AI development and adoption, and leverage the potential of AI in unlocking productivity, addressing societal challenges and delivering public services.[114]

This strategy was refreshed in November 2024, primarily to take into account the EU AI Act and technological developments.[115] Key strategic commitments included:

- Ensuring Ireland is a leader in the effective implementation of the EU AI Act, including via constructive participation in the EU AI Board and its working groups and rolling out AI standards and certification.

- Developing a national campaign to raise awareness among SMEs of the benefits of AI adoption and the supports available.

- Establishing an AI regulatory sandbox to foster innovation in AI.

- Creating a National AI Research Nexus with a unified identity.

- Continuing to develop high calibre AI talent through Research Ireland Centres.

- Creating a safe space where civil and public servants are encouraged to experiment with AI tools.

- Updating the 2022 study on AI skills of the Expert Group on Future Skills Needs, aligned to the targets set out in the EU Digital Decade for skills and female participation.

- Expanding the range of digital upskilling and reskilling initiatives, including those available via Skillnet Ireland, Springboard+, apprenticeships, and future human capital initiatives.

- Promoting increased use of and access to advanced AI computing services.

- Supporting the establishment of infrastructure, including data centres, to underpin rollout of the next waves of AI technologies.

As with the AI Strategy in Scotland, the Irish AI Strategy looks at some broader economic, skills, infrastructure and societal issues.

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114 Department of Enterprise, Trade and Employment, AI - Here for Good: National Artificial Intelligence Strategy for Ireland, July 2021 enterprise.gov.ie/en/publications/national-ai-strategy.html [Accessed 21 May 2025]

115 Government of Ireland, Ireland's AI Strategy, 2024 enterprise.gov.ie/en/publications/publication-files/national-ai-strategy-refresh-2024.pdf [Accessed 21 May 2025]

The Programme for Government for the incoming Irish Government in 2025 included extensive commitments regarding digital and artificial Intelligence. This included a commitment to:

> *"Publish and implement a new National Digital Strategy to fully realise the economic potential of the digital and AI revolution, and the development of new clean technologies which can be key drivers of growth and the decarbonisation of our economy."*[116]

Notably, the new Irish Government has given a Minister a brief that directly references AI with the appointment of Niamh Smyth TD, as Minister of State at the Department of Enterprise, Trade and Employment with responsibility for "Trade promotion, artificial intelligence and digital transformation".

Selective Relevant Commitments in the Irish Programme for Government

Ireland as a Leader in the Digital Economy and Artificial Intelligence

- Update the National Digital Strategy to bring together digital policy and regulatory responsibilities and lead on delivery of these objectives across all Departments and Agencies.

- Invest to make Ireland an EU centre of expertise for digital and data regulation and a regulatory hub for companies operating across the EU Digital Single Market.

- Realise the full benefits of digitalisation, including AI, to increase productivity of Irish businesses.

- Work with our EU partners to ensure that Ireland and the EU is well-placed to benefit from the innovation and investment potential of new technologies like AI, while also protecting privacy and other fundamental rights.

- Invest in digital skills at all levels from basic digital literacy for all citizens to being a leader in higher education and research in areas such as Artificial Intelligence and Quantum Computing.

- Ensure that the skills necessary for AI deployment, AI innovation and AI support are provided through our education and professional learning networks.

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116 *programmeforgovt.pdf P13*

- Resource and implement the new EU Online Safety Framework to protect vulnerable groups from online harm, and tackle disinformation.

- Seek financial and other support for data interconnections with other EU member states and with countries around the world, building on Ireland's existing strengths on data interconnections.

Data Centre Policy

The Government recognises the critical urgency of digital infrastructure in economic growth and the delivery of public services. This importance will only grow with as Artificial Intelligence (AI) develops. This Government will:

- Allow data centres that contribute to economic growth and efficient grid usage, such as prioritising waste heat capture for district heating systems and other local uses.

- Enhance data centres' use of renewable energy sources, energy efficient technology and effective solutions, such as waste heat capture, to reduce their carbon footprint.

- Scale-up investment in critical infrastructure and in our electricity grid which will be advantageous for customers and enhance the data centre footprint to support continued FDI investment.

- Provide a nationwide 5G network for high-speed, low-latency connectivity, which is crucial for the tech sector and data centres.

- Expedite the publication of a Private Wires Policy Framework

A new era of innovation and digital transformation in health

This Government is committed to embracing the advancements in science and technology to improve patient access, experience and health outcomes. This Government will:

- Continue to work towards the full digitisation of Irish healthcare records and information systems.

- Launch a National Patient App, giving patients easier access to their health information.

- Establish a national system for electronic prescribing.

- Develop an AI in Health strategy.

- Promote greater use of remote health monitoring and virtual care solutions.

- Government will progress the implementation of the collaboration agreement with the World Health Organisation. This includes the delivery of a Global Conference on Health Workforce Optimisation and Digital/Assistive Technologies EXPO.

The AI Advisory Council has been established as an independent body established to provide expert advice to the Irish Government on all aspects of artificial intelligence. The Council comprises leading experts from academia, industry and civil society, and its inaugural meeting occurred in January 2024.[117] The centre has published a range of papers, including on education and skills.[118]

A notable proposal of the Council is for the establishment of an AI Observatory:

> *"Ireland needs to develop policies that can be sufficiently robust to a wide range of possible future scenarios and timetables. To deliver this, policy makers need better measurement and insights into what is occurring. Therefore, we are calling on the Government to directly invest in the development of a real-time, publicly available 'AI Observatory' that delivers data and insights on a wide range of AI metrics such as labour market dynamics, capital flows, skills development, quality of life enhancement, complementary innovations, public attitudes and much more."*[119]

Recommendation

- The Executive should explore the proposed AI Observatory in Ireland alongside the OECD AI Policy Observatory, with a view to the establishment of an equivalent structure in Northern Ireland, in order to share data and policy insights.

- The Executive should consider the AI Advisory Council in Ireland, alongside the Scottish AI Alliance as a potential model for civic and academic engagement.

117 enterprise.gov.ie/en/publications/membership-of-the-ai-advisory-council.html [Accessed 22 May 2025]

118 AI Advisory Council Advice Papers, February 2025, enterprise.gov.ie/en/publications/ai-advisory-council-advice-papers.html [Accessed 21 May 2025]

119 Ireland's AI Advisory Council Recommendations - Helping to Shape Ireland's AI Future p2, enterprise.gov.ie/en/publications/publication-files/ai-advisory-council-recommendations-helping-to-shape-irelands-ai-future.pdf [Accessed 21 May 2025]

Part 3
AI in the
Public Sector

Part 3: AI in the Public Sector

3.1 Role of AI in Public Sector Transformation

Artificial Intelligence should be regarded as central to public sector transformation in Northern Ireland, alongside other jurisdictions. It is important to note that governments have been using digital and other AI solutions for many years. However, the onset of generative AI has the potential to take this to a new level.

AI carries huge potential to be relevant to government and the wider public sector in two respects. For civil service processes, it can aid with minute-taking, record-keeping, routine correspondence, preparing submissions, and aspects of operational decision-making. For public services, the adoption and deployment of Artificial Intelligence in the public sector and within public services offers considerable gains in efficiencies, customer engagement, responsiveness and better outcomes. In particular, there is a significant potential for AI to enable a greater focus on prevention and early intervention on a broad range of issues. Furthermore, it frees up resources for use in other areas and potentially make public finances more sustainable.

The OECD outlines that the responsible use of AI can improve the functioning of government administrations in several ways:

- The use of AI in the public sector can help governments increase productivity with more efficient internal operations and more effective public policies.

- AI can help make the design and delivery of public policies and services more inclusive and responsive to the evolving needs of citizens and specific communities.

- AI can strengthen the accountability of governments by enhancing their capacity for oversight and supporting independent oversight institutions.[120]

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120 OECD (2024), "Governing with Artificial Intelligence: Are governments ready?", *OECD Artificial Intelligence Papers*, No. 20, OECD Publishing, Paris, https://doi.org/10.1787/26324bc2-en.

An OECD Expert Group has put forward ten priority benefits from AI:

1. Accelerated scientific progress, such as through devising new medical treatments;

2. Better economic growth, productivity gains and living standards;

3. Reduced inequality and poverty, aided through poverty reduction efforts and improved agriculture;

4. Better approaches to address urgent and complex issues, including mitigating climate change and advancing other Sustainable Development Goals;

5. Better decision-making, sense-making and forecasting through improved analysis of present events and future predictions;

6. Improved information production and distribution, including new forms of data access and sharing;

7. Better healthcare and education services, such as tailored health interventions and tutoring;

8. Improved job quality, including by assigning dangerous or unfulfilling tasks to AI;

9. Empowered citizens, civil society and social partners, including through strengthened participation; and

10. Improved institutional transparency and governance, instigating monitoring and evaluation.[121]

However, it is also incumbent on government and other public sector actors to build public trust in respect of AI related services and to mitigate against risks. This issue is explored within this paper.

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121 OCED (2024) Assessing Potential Future Artificial Intelligence Risks, Benefits And Policy Imperatives
www.oecd.org/content/dam/oecd/en/publications/reports/2024/11/assessing-potential-future-artificial-intelligence-risks-benefits-and-policy-imperatives_8a491447/3f4e3dfb-en.pdf

3.1.1 International Best Practice and Guidance

The OECD has provided considerable guidance to aid government with deploying digital solutions, and specifically artificial intelligence, in public services. It has highlighted the potential use of digital public infrastructure in freeing up the time of public servants, allowing a reorientation of efforts from mundane tasks to high-value-added tasks, increasing efficiency and effectiveness.[122]

The G7 Toolkit for AI in the Public Sector provides …

… a comprehensive guide designed to help policymakers and public sector leaders translate principles for safe, secure, and trustworthy Artificial Intelligence (AI) into actionable policies. AI can help improve the efficiency of internal operations, the effectiveness of policymaking, the responsiveness of public services, and overall transparency and accountability. Recognising both the opportunities and risks posed by AI, this toolkit provides practical insights, shares good practices for the use of AI in and by the public sector, integrates ethical considerations, and provides an overview of G7 trends. It further showcases public sector AI use cases, detailing their benefits, as well as the implementation challenges faced by G7 members, together with the emerging policy responses to guide and coordinate the development, deployment, and use of AI in the public sector. The toolkit finally highlights key stages and factors characterising the journey of public sector AI solutions.[123]

Key Aspects of the G7 Toolkit for AI in the Public Sector

The toolkit identifies a number of core guidelines, namely:

- **Establish clear strategic objectives and action plans in line with expected benefits**

  … G7 AI strategies tend to concentrate on essential enablers like infrastructure, data access, computing power, research abilities, and public sector workforce development. Specific initiatives such as ethical guidelines, risk management frameworks, talent development, procurement rules, cooperative partnerships, data availability, and digital infrastructure enhancement have been highlighted by members in this respect.

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122 OECD (2024) Enabling Digital Innovation in Government, www.oecd.org/en/publications/enabling-digital-innovation-in-government_a51eb9b2-en/full-report.html

123 OECD (2024) G7 Toolkit for Artificial Intelligence in the Public Sector, www.oecd.org/en/publications/g7-toolkit-for-artificial-intelligence-in-the-public-sector_421c1244-en.html

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

- **Include the voices of users in shaping strategies and implementation**

  G7 members report involving a broad range of stakeholders in designing their AI strategies, through e.g. public consultations, stakeholder outreach, and public requests for comment. The stakeholders involved include government actors, business leaders, govtech ecosystems and the research community. Inclusive approaches help build trust among users, governments, and other relevant stakeholders to shape AI powered public services in a way that adds value to policy making and service design and delivery.

- **Overcome siloed structures in government for effective governance**

  Effective governance requires overcoming the tensions related to mandates, structures, and mechanisms across public sector organisations that are often siloed. G7 members tend to navigate such tensions and to align organisational strategies through cross-cutting or multi-institutional approaches, or by establishing lead institutions with a coordination role.

- **Establish robust frameworks for the responsible use of AI**

  Robust legal, regulatory, and policy frameworks are needed to ensure the safe, secure, and trustworthy development, deployment, and use of AI in and by the public sector. Effective, agile, and innovation-ready regulations can protect citizens, including their free exercise of rights, effectively manage risks and prevent misuse, while aligning AI advancements with societal values and needs. Existing governance frameworks address a variety of issues ranging from AI use, data protection, privacy, and data sharing, to freedom of information. G7 members have implemented additional safeguards to enable the safe, secure, and trustworthy, development, deployment, and use of AI. These include transparency requirements for public algorithms, regulations on automated decision-making, and risk management frameworks or ethical guidelines addressing the implications of the design and use of AI systems, providing developers and users with the conceptual resources and practical tools to enable responsible design and implementation of AI projects ...

- **Improve scalability and replicability of successful AI initiatives**

  While G7 members have made significant progress in developing and deploying AI across the public sector, many opportunities remain to be further explored. While more research in this respect is needed, it is key to always balance risks and opportunities, as the application of AI in certain areas may raise concerns about privacy, security, bias, and discrimination, outweighing potential benefits.

- **Enable a more systematic use of AI in and by the public sector**

  G7 members have identified several key challenges associated with the systematic implementation of AI in and by the public sector and are developing concrete policy options to address them. Efforts are underway to build the necessary foundations for effective and responsible use of AI, which include strengthening infrastructure and data governance. Data governance frameworks for the public sector are becoming increasingly relevant and aligned across countries. An increasing number of dedicated frameworks and guidelines for AI procurement are emerging that include requirements related to the trustworthiness of AI. AI skills frameworks are being expanded to address not only technical expertise, but also to build the talent of the leadership, secure essential soft skills as well as the capabilities needed to support design and customer service. Additionally, monitoring tools are being introduced to ensure AI trustworthiness and safety.

- **Adopt an incremental and experimental approach to the deployment and use of AI in and by the public sector**

  Some G7 members have adopted an incremental approach to AI in the public sector, providing clear guidance and frameworks, and ensuring the effectiveness and trustworthiness of AI solutions, to maximise benefits and mitigate potential drawbacks. Incremental and experimental approaches entail engaging stakeholders throughout the development phase, evaluating user needs, assessing data availability and quality, and continuously monitoring progress from the prototyping and piloting phases (e.g. through ex ante impact assessments or within the framework of regulatory sandboxes). By following such an approach, governments can develop and deploy AI responsibly and achieve suitable outcomes.

3.1.2 International Examples

Global AI adoption: The leaders

Globally, countries like the US, Finland, Estonia, Singapore and China are frequently cited as being leading innovators in AI. In particular, Finland and Estonia are the forefront in public sector development, including enhanced citizen engagement and delivery of services. Estonia has a strong record in digitalisation, with 99% of government services delivered online. China is implementing initiatives with regard to smart cities.[124] Considerable deployment of AI has occurred over the 50 US states.[125]

Some key areas where AI is making a difference include:

- Improving citizen engagement services with AI-powered chatbots to answer queries, resolve issues and provide timely updates.

- Enhancing cybersecurity and protecting data.

- Healthcare innovation, including in public health and prevention, through helping to analyse health data, predicting disease outbreaks, enhancing patient care and targeting resources.

- Providing personalised learning experiences, better tracking student progress and making education more accessible.

- Improving the efficiency and effectiveness of energy, public utilities and transportation management.

UK Government Adoption

The UK has significantly increased use of AI in the public sector and its potential in relation to public services is a major focus of the UK Government. The use of AI in this regard is a central theme of the current Government, and has featured predominantly within the messaging of both the Prime Minister and the Chancellor of the Exchequer.

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124 HCLTech, The top AI applications in government contributing to public sector innovation, 2024 www.hcltech.com/trends-and-insights/top-ai-applications-government-contributing-public-sector-innovation

125 National Association of State Technology Directors, Artificial Intelligence in State Government IT Operations (2024) higherlogicdownload.s3.amazonaws.com/NASTD/UploadedImages/20b47faa-5f00-40f1-bc5f-7ea8c80514d3/NASTD_AI_Survey_Summary_2024_Final.pdf

A Turing Institute paper has estimated that UK central government conducts approximately one billion citizen-facing transactions per year in the provision of around 400 services, of which approximately 143 million are complex repetitive transactions. The authors estimate that 84% of these complex transactions are highly automatable, representing a huge potential opportunity: saving even an average of just one minute per complex transaction would save the equivalent of approximately 1,200 person-years of work every year.[126] The UK Government itself recognises that an average adult spends equivalent of ten days dealing with government bureaucracy.[127]

In 2023 the Cabinet Office's Central Digital and Data Office (CDDO) began work with the Department for Science, Innovation & Technology (DSIT) and HM Treasury to develop a strategy for AI adoption in the public sector. In January 2025, in response to AI Opportunities Action Plan, Government stated:

> **AI presents exciting opportunities to improve people's lives, including by making our public services better. To transform our public services with AI and encourage the private sector to stimulate growth through AI adoption, we will take forward Matt Clifford's recommendations on adoption, including to employ a flexible 'Scan, Pilot, Scale' approach to adoption of AI across our public services.[128]**

To support this transformation, the government plans to recruit 2,000 tech apprentices and aims for 10% of civil servants to hold digital roles within five years.[129]

The Chancellor of the Exchequer in the March 2025 Spring Statement announced £3.25 billion of investment to deliver the reforms to public services need through a new transformation fund with an AI focus.[130]

126 The Alan Turing Institute, AI for bureaucratic productivity: Measuring the potential of AI to help automate 143 million UK government transactions, www.turing.ac.uk/news/publications/ai-bureaucratic-productivity-measuring-potential-ai-help-automate-143-million-uk [Accessed 19 May 2025]

127 UK Government, State of digital government review, January 2025, www.gov.uk/government/publications/state-of-digital-government-review/state-of-digital-government-review?utm [Accessed 19 May 2025]

128 UK Government, AI Opportunities Action Plan: government response, January 2025, www.gov.uk/government/publications/ai-opportunities-action-plan-government-response/ai-opportunities-action-plan-government-response {Accessed 19 May 2025]

129 Prime Minister: I will reshape the state to deliver security for working people, 13 March 2025, www.gov.uk/government/news/prime-minister-i-will-reshape-the-state-to-deliver-security-for-working-people [Accessed 19 May 2025]

130 Hansard, 26 March 2025, hansard.parliament.uk/commons/2025-03-26 [Accessed 19 May 2025]

The Government's AI Playbook[131] establishes 10 principles to guide the "*safe, responsible and effective use of artificial intelligence in governmental organisations*," which are:

1. You know what AI is and what its limitations are

2. You use AI lawfully, ethically and responsibly

3. You know how to use AI securely

4. You have meaningful human control at the right stages

5. You understand how to manage the full AI life cycle

6. You use the right tool for the job

7. You are open and collaborative

8. You work with commercial colleagues from the start

9. You have the skills and expertise needed to implement and use AI solutions

10. You use these principles alongside your organisation's policies and have the right assurance in place

UK Examples of AI in Practice

A range of example of deployment of AI to support public services are available.

The UK Government has a suite of current AI tools, collectively called 'Humphrey', with others under-development, to improve civil service processes[132]:

• Red Box – helps to summarise documents.

• Consult – automates the processing of public consultations.

• Parlex – analyses legislative and other Parliament processes.

• Minute – provides a secure AI transcription service.

Other work underway includes:

• Caddy – enables customer service agents across government.

• Scout – improves the delivery of major project delivery.

• Connect – matches capacity to demand in the grid connections queue.

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131 UK Government, AI Playbook for the UK Government, February 2025,
       www.gov.uk/government/publications/ai-playbook-for-the-uk-government [Accessed 19 May 2025]
132 UK Government AI Projects, ai.gov.uk/projects/ [Accessed 19 May 2025]

- Extract – extracts actionable data from old documents.

- rAPId – provides an end-to-end solution to sharing data across government.

- i.AI and NHS England Collaboration Charter – supports the use of AI in the NHS.

In terms of public service delivery, examples include:

- The Department for Business and Trade using an algorithmic tool to predict which companies will most likely succeed in exporting goods;

- The Ministry of Justice applying algorithmic tools to study how individuals interact with the justice system;

- The Foreign, Commonwealth and Development Office (FCDO) using uses AI to help citizens in distress abroad; and

- Government across the board using AI tools to create more effective job listings, match job seekers with the right opportunities and improve recruitment processes.[133, 134]

Regarding social care, AI is helping people who would otherwise need additional care, via using sensors to spot changes in behaviour, like missed meals.[135]

Ulster University's Centre for Legal Technology is exploring the role of AI in judicial decision making in terms of how the technology could be integrated responsibly in judicial decision-making, while ensuring fairness, transparency, and judicial independence. This is supported by funding from the UK's AI Security Institute.[136]

The UK Government publishes information in relation to the algorithmic tools used in the public sector.[137] These are completed in accordance with the Algorithmic Transparency Recording Standard.[138]

133 Open Access Government, How AI is being used to transform public services in the UK, December 2024, www.openaccessgovernment.org/how-ai-is-being-used-to-transform-public-services-in-the-uk/186588/?utm [Accessed 19 May 2025]

134 UK Government, Find out how algorithmic tools are used in public organisations www.gov.uk/algorithmic-transparency-records

135 UK Government, "AI sensors on fridges and kettles helping vulnerable people to live independently", January 2025, www.gov.uk/government/news/ai-sensors-on-fridges-and-kettles-helping-vulnerablepeople-to-live-independently [Accessed 22 May 2025]

136 www.ulster.ac.uk/news/2025/april/centre-for-legal-technology-to-lead-research-into-the-role-of-ai-in-judicial-decision-making [Accessed 22 May 2025]

137 UK Government, Find out how algorithmic tools are used in public organisations www.gov.uk/algorithmic-transparency-records

138 UK Government, Algorithmic Transparency Recording Standard Hub, www.gov.uk/government/collections/algorithmic-transparency-recording-standard-hub [Accessed 19 May 2025]

However, within a 2024 examination of AI deployment by the UK Government, the National Audit Office reported[139]:

- Limited AI Deployment: Only 37% of surveyed government bodies had implemented AI, typically in one or two use cases. However, 70% were piloting or planning AI initiatives, often exploring around four use cases per body.

- Draft Strategy Lacks Clarity: The government's AI adoption strategy remains in draft form, lacking clear ownership, accountability, funding, and performance metrics.

- Identified Barriers: Challenges hindering AI adoption include outdated IT infrastructure, data quality issues, skills shortages, and the need for changes in business processes.

As a follow-up, the House of Commons Public Accounts Committee in March 2025 reported on the adoption of AI by the public sector, and warned "that while AI has the potential to radically change public services, the scale of the task ahead in grasping these opportunities is concerningly great."[140]

The PAC is also warning that too often Government data are of poor quality, and often locked away in out-of-date, or 'legacy', IT systems.

The report further finds slow progress in ensuring transparency in how AI is used by Departments, which is linked to public trust. In noted that as of January 2025, only a relative handful of records had been published on the Algorithmic Transparency Recording Standard.

The PAC's inquiry highlights a number of concerns that the dominance of a small number of large technology suppliers in the AI market risks stifling competition and innovation. The Government's approach to procurement also risks over-reliance on the services of specific companies, and an inability to adapt.

Another barrier to the safe and effective adoption of AI by Government are longstanding and persistent digital skills shortages. Around half of roles advertised in civil service digital and data campaigns went unfilled in 2024, and 70% of Government departments report difficulty recruiting and retaining staff with AI skills.[141]

139 National Audit Office, Use of artificial intelligence in government, March 2024, www.nao.org.uk/reports/use-of-artificial-intelligence-in-government/ [Accessed 19 May 2025]

140 House of Commons Public Accounts Committee, "Uphill struggle ahead for Govt's use of AI as PAC report reveals the scale of the challenge" 26 March 2025 [Accessed 19 May 2025]

141 Committee of Public Accounts, Use of AI in Government, March 2025, committees.parliament.uk/publications/47199/documents/244683/default/ [Accessed 19 May 2025]

Scotland

In Scotland, a Public Sector AI Taskforce brings together representatives from different government agencies to promote collaboration on key issues such as data, skills and governance, including from the NHS, police, education, Scottish Enterprise and local government.[142]

NHS National Services Scotland a platform to consolidate healthcare data, enabling predictive analysis and resource optimisation. This approach supports initiatives like the Cancer Medicines Outcomes Programme which links national datasets with prescribing data to enhance personalised care.[143]

The Scottish Association for Marine Science and NatureScot employ "Skatespotter," an AI-powered database, to monitor the critically endangered flapper skate. By analysing thousands of images submitted by anglers, the system has identified nearly 2,500 individual fish, contributing to conservation efforts in marine protected areas.[144]

Ireland

The iLead Virtual Learning Centre in Ireland has documented some of the use of AI within the Iresh public sector.[145]

Key Takeaways from their website include:

- AI diagnostics in Irish hospitals improve patient care and health outcomes by providing real-time accurate diagnostics.

- AI in transportation in reduces travel times, carbon emissions, and enhances public transportation through congestion prediction and route optimization.

- AI in education tailors educational content to individual students, providing an efficient and engaging learning experience.

- AI in public safety optimises crime prevention strategies, resource allocation, and improves public safety through predictive modelling and efficient allocation of police resources.

142 The Scottish Public Sector AI Task Force, www.scottishai.com/task-force [Accessed 19 May 2025]

143 NHS National Services Scotland, "Scotland's data and AI strategy: enhancing healthcare and driving innovation", www.nss.nhs.scot/news/scotlands-data-and-ai-strategy-enhancing-healthcare-and-driving-innovation?utm [Accessed 19 May 2025]

144 The Guardian, AI scanning helps Scottish conservation project turn tide for flapper skate, 5 April 2025, www.theguardian.com/environment/2025/apr/05/scotland-conservation-project-flapper-skate-ai-database?utm [Accessed 19 May 2025]

145 Ilead, AI in the Public Sector: Innovative Use Cases From Ireland, ilead.ie/ai-in-the-public-sector-innovative-use-cases-from-ireland/?utm [Accessed 19 May 2025]

3.1.3 AI in NI Public Sector

In contrast with other jurisdictions, including direct neighbours, there is a relative absence of information in the public domain on the use of AI in the public sector in Northern Ireland.

However, it is notable that in their recent report Trinity College Dublin and Microsoft note that:

> *We see notable variations in public sector AI adoption. In Northern Ireland, 24% of public sector organisations report using AI in most or all data-driven decision-making, whereas in Ireland, this figure stands at just 14%. This suggests that Northern Ireland's public sector is integrating AI more comprehensively into decision-making processes compared to its counterpart in Ireland.*[146]

There are examples of innovation and success within departments across NI. The Department of Agriculture, Environment and Rural Affairs (DEARA), for example, has effectively deployed AI to assist with agri-food and animal movements. Other work is under development. The Education Authority has recently Nurture as an assessment and feedback technology provider as part of a cloud-based educational solution across 1,100 schools in NI.[147]

AI innovation is also a feature within local government. For example, Derry City and Strabane District Council has introduced "RIA," an AI-powered chatbot providing 24/7 information on recycling and waste management. This has been developed as part of the ENAIBLER project, supported by Interreg.

AI as a Mechanism for Public Sector Transformation in NI

Digital and AI projects were a major focal point of bids into the £235m Public Sector Transformation Fund; 18 of the 29 projects initially short-listed are being considered as part of a Digital Landscape Review.

However, a constraint of the Executive's current Transformation process has been its bottom-up approach,via bids from Departments. By contrast, a more strategic approach would identify the key opportunities for change and prioritise cross-cutting resources on this basis. Effective public sector transformation should be cross-departmental in its very nature. This is particularly the case in light of potential capacity issues, particularly around skills and data infrastructure in the short to medium term.

146 Trinity College Dublin Business School and Microsoft, The AI Economy in Ireland 2025: Trends, Impact & Opportunity, p10, www.tcd.ie/media/tcd/business/pdfs/research/Microsoft-Report.pdf [Accessed 19 May 2025]

147 Nuture, Nurture Chosen to Deliver AI-Powered Assessment and Feedback Technology for 1,100 schools in Northern Ireland, May 2024, gonurture.com/post/nurture-chosen-to-deliver-ai-powered-assessment-and-feedback-technology-for-1-100-schools-in-northern-ireland [Accessed 21 May 2025]

Nonetheless, the Transformation Fund need not necessarily be the only source of AI transformation projects. Further initiatives should be explored from within existing budgets – despite the considerable constraints therein, given the significant potential for improved outcomes, greater efficiency and better financial sustainability.

Nonetheless, there is a case for increasing the scale of the Transformation Fund either from reallocating resources from the existing NI budget or from further funding from the UK Government linked to proposals for a wider, mutually beneficial long-term transformation plan.

Wider Policy Opportunities and Challenges

There are some wider considerations relating to the opportunities, challenges and risk from AI that the Executive could consider in terms of current and future policy commitments.

These considerations lie beyond the boundaries of any Executive AI strategy. However, there should be a recognition of the potential for AI to impact on a broad range of policy issues.

AI opportunities and/or associated risks should be considered, as a matter of routine, within the policy development process of all Departments and Arm's Length Bodies and by the Executive as a whole with respect to the implementation of the current Programme for Government and the development of any future programmes.

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

Recommendations

- Consideration should be given to the guidelines from the OECD G7 Toolkit for AI in the Public Sector, namely:

  - establish clear strategic objectives and action plans in line with expected benefits;

  - include the voices of users in shaping strategies and implementation;

  - overcome siloed structures in government for effective governance;

  - establish robust frameworks for the responsible use of AI;

  - improve scalability and replicability of successful AI initiatives;

  - enable a more systematic use of AI in and by the public sector; and

  - adopt an incremental and experimental approach to the deployment and use of AI in and by the public sector.

- The Executive should apply the UK AI Playbook in the decision of public sector AI projects or create a local equivalent.

- Collaborative engagement mechanisms should be put in place across the public sector including between government departments, arms-length bodies, and local government.

- A review should be carried out to assess current AI competency and literacy within the public sector, with a plan devised for upskilling and bringing in external talent, where appropriate.

- The scale of the transformation fund should be increased either from reallocation of funds or via development of creative, mutually beneficial proposals for additional funding from the UK Government as part of a long-term transformation plan. Digital and AI projects ought to form a significant component of any such proposals.

Part 4
Identified Policy Imperatives for the Future of AI in NI

Part 4: Identified Policy Imperatives for the Future of AI in NI

4.1 Key Strategic Drivers: Data, Trust, Risk and Regulation

4.1.1 Data

Data is foundational to Artificial Intelligence, determining the accuracy and bias – or lack thereof – in AI systems, and is therefore central to the development of responsible AI.

The more comprehensive and representative the underlying datasets, the more reliable AI outcomes will be. By contrast, biased or unrepresentative data would underpin AI systems that could embed and amplify inequalities and misinformation.

Public Sector

Enabling access to quality public sector data will require cooperation between and within governments, at various levels. Access to personal data will also necessitate heightened levels of trust amongst the public and is thus contingent on transparency and clear communication regarding ethical considerations. Practical considerations regarding the use, securing and storage of data must also be clearly articulated to embed trust. This ultimately informs the democratically determined laws and regulations that govern the sharing of data.

It will be important to create secure, anonymised datasets and frameworks that facilitate cross-departmental data sharing, whilst preserving anonymity. In order to achieve this, the Executive will need to obtain and sustain public confidence. It will thus be important to work collaboratively with citizens in NI to ensure transparency and engage in genuine, ongoing collaboration in relation to existing and emerging data concerns. Transparency is essential to address concerns over surveillance and misuse.

The Executive will also need to work, within the confines of data regulation, to break down data barriers between and within departments, so that they are able to fully leverage for optimal service delivery and maximise other associated benefits of AI systems.

A further issue for the Executive's consideration relates to the distinction between the handling and management of personal and anonymous data, including the implications of GDPR.

Private Sector

In terms of private sector data issues, there will be a natural tendency for larger institutions to have a comparative advantage associated with larger datasets. Incumbent big tech companies have access to enormous, quality datasets whereas smaller operations lack comparative access.

In economic terms, AI as a technology thus has natural monopoly aspects due to the core principle in probability theory 'the Law of Large Numbers' and associated links between the scale of data sets and resultant accuracy of AI estimations. This raises issues for policymakers regarding potential anti-competitive impacts, and associated effects on innovation, including the potential for this – in the absence of mitigating policy – to be skewed towards private sector interests.

Scope for a Global Data Library

The optimal data landscape for AI is arguably a Global Data Library, to ensure diversity and maximum scale. This would likely minimise bias and inaccuracy outcomes, and might also accelerate research and innovation by levelling up research opportunities across the globe.

A Global Data Library would also enable global level analysis of some of the most pressing problems the world currently faces, such as modelling in relation to climate change, trends in migration and inequality.

However, data sovereignty remains a concern for many countries and is likely to persist given elevated geopolitical risks. As such, we now turn to consideration at a national and regional level.

UK Data Architecture

The creation of a National Data Library (NDL) is currently underway in the UK. This seeks to scale up data infrastructure, address barriers that impede the efficient use of data, ease access and help bridge different sets and methods of collection. Fundamentally, it is about making the greatest economic and societal use of the data resources available.

Think tanks including the Tony Blair Institute have proposed how the National Data Library might be designed.[148]

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148 Tony Blair Institute, Governing in the Age of AI: Building Britain's National Data Library, February 2025
     institute.global/insights/tech-and-digitalisation/governing-in-the-age-of-ai-building-britains-national-data-library [Accessed 19 May 2025]

The UK Data Library builds on existing infrastructure in the form of the Administrative Data Research UK. This is a UK-wide partnership which seeks to transform the wealth of public sector data into research assets and policy-relevant insights, supported by the Economic and Social Research Council. Northern Ireland's involvement includes the Northern Ireland Statistical and Research Agency (NISRA), Queen's University and Ulster University.[149]

NI Data Landscape

Northern Ireland's Open Data Strategy, 2020-2023, is now out of date. It was developed to enhance the accessibility, transparency, and reuse of public sector data. Its overarching vision was to stimulate the availability and use of open data to build trust in government services, demonstrate the value of open data as an agent of economic growth, and support the burgeoning open data ecosystem that has developed locally.[150]

In the age of Artificial Intelligence, there is a strong case for the Executive to devise a revised strategy.

The National Data Library is intended to be a four-nation collaboration, and a public-private partnership. With a timescale of implementation by 2030, the Executive would need to determine if and how Northern Ireland will engage and what alternative or supporting infrastructure should be put in place within this region.

The Executive might wish to consider the case for the establishment of a Regional Data Hub as an equivalent, localised model of the National Data Library. The lessons from and interaction with the Scottish Data Lab may also be highly relevant in this context.[151]

At present, public data in NI is heavily siloed within various departments and arm's length Bodies. Work should be undertaken to break down those barriers. However, such work will be constrained on reflection of the legal basis on which it was collected. In a significant number of circumstances, there will be justifiable or necessary reasons for maintaining barriers.

Nevertheless, the scope for legislation to better govern how data is collected and shared going forward should be considered by the Executive.

149 Administrative Data Research UK, www.adruk.org, [Accessed 19 May 2025]
150 Department of Finance, Open Data Strategy for Northern Ireland, 2020-2023, www.finance-ni.gov.uk/publications/open-data-strategy-northern-ireland-2020-2023?utm [Accessed 19 May 2025]
151 thedatalab.com [Accessed 22 May 2025]

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

A further angle with a particular significance to Northern Ireland is how data sets can be shared or even integrated on a north-south basis. With the potential for public services and economic development to be further delivered within that context, the case for better sharing and integrating data will grow. At the same time, the legal barriers to engagement may be greater than within the UK at present.

4.1.2 Trust

Current Public Sentiment

Trust and public confidence are key to the sustainable adoption and deployment of Artificial Intelligence. Accountability, transparency around data use, governance and mitigation of risk are all key determinants of such trust and confidence. The challenge to build and sustain trust in AI coincides with wider issues of deteriorating belief and faith in governments and other institutions over recent decades. Accessibility of quality public data is central to the reliability of AI, and that, in turn, is dependent on trust.

This also extends to the security of commercially sensitive or personal data. In contrast, the absence of trust and associated access to data – including that of a personal nature – will erode the reliability of AI outcomes. This unreliability may then further compound trust issues and create a doom loop of sentiment, compromising the potential to harness responsible AI for productive purposes.

A number of studies have been undertaken with regard to public attitudes and trust in AI; however, this remains an early field of research.

A UK Government survey from December 2024 found that:[152]

- 43% of UK adults believe AI will have a positive impact on society, while 33% anticipate a negative effect.

- Regarding personal impact, 39% expect positive outcomes, compared to 29% who foresee negative ones.

- Optimism is higher among younger adults (18–34), graduates, ethnic minorities, and those with high digital engagement.

- In Northern Ireland and England, 40% are optimistic about AI's personal impact, whereas in Scotland and Wales, this drops to 33%.

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152 Public attitudes to data and AI: Tracker survey (Wave 4) report - GOV.UK ww.gov.uk/government/publications/public-attitudes-to-data-and-ai-tracker-survey-wave-4/public-attitudes-to-data-and-ai-tracker-survey-wave-4-report?#balancing-opportunities-and-risks-of-ai [Accessed 22 May 2025]

It further concluded that:

"The UK public has mixed perceptions about AI's impact on society and themselves. While many view AI positively on a societal level, fewer are optimistic about its impact on them personally. The public acknowledges that AI has the potential to bring both benefits and challenges. Whilst it is recognised for its potential to have a positive impact on sectors like healthcare and crime prevention, there are also concerns about its potential to cause job displacement and spread misinformation. The varying levels of optimism and pessimism across different demographics suggest the public associate a diverse range of hopes and fears with the future of AI."

A joint survey commissioned in November 2024 by the Ada Lovelace Institute and the Alan Turing Institute found that 72% of the UK public feel that laws and regulation would increase their comfort with AI, up from 62% in 2023. It further reported that the public perceive benefits to AI in terms of speed and efficiency improvements. However, concerns were expressed regarding transparency in decision-making, the use of their personal data and representation in decision-making. In particular, 83% of the UK public are concerned about public sector bodies sharing their data with private companies to train AI systems[153].

In a survey on attitudes towards AI, KPMG found that while 69% of people in the UK use AI for work, study or personally, only 42% say they're willing to trust AI. What's more, fewer than three-fifths (57%) are willing to accept or approve the use of AI. It also found that 80% of the UK public believe AI regulation is required. 91% want laws and action to combat AI-generated misinformation, with just 33% feeling that the current safeguards are adequate. Nevertheless, 71% of the UK public expect AI to deliver on a range of benefits, and 59% have personally experienced or observed benefits from AI use[154].

The common trends from these surveys are that growing numbers of people are using AI, but trust and confidence levels remain mixed, with strong support for increased regulation. There is a growing expectation that AI will deliver practical benefits.

To date, there is an apparent absence of any equivalent Northern Ireland-specific polling regarding AI and trust.

153 Ada Lovelace Institute, 7 in 10 say laws and regulations would increase their comfort with AI amid rising public concerns, national survey finds, 25 March 2025, www.adalovelaceinstitute.org/press-release/ada-turing-survey-2025/?utm= [Accessed 21 May 2025]

154 KPMG, UK attitudes to AI, A UK perspective on 'Trust, attitudes and use of artificial intelligence: A global study 2025' https://kpmg.com/uk/en/insights/ai/uk-attitudes-to-ai.html [Accessed 21 May 2025]

Building and Sustaining Trust

It is incumbent upon policymakers to address these perceptions and public fears. The need for accountability points to the requirement for open debate and democratic oversight. It is notable that, to date, the scale of public discussion in Northern Ireland regarding AI has been lower than in neighbouring and other jurisdictions.

There is a strong case for the Executive to put in place a communications strategy regarding AI. In particular, it should aim to demonstrate transparency regarding the adoption of AI within the public sector and how data is being/will be used. The Executive could reinforce this by facilitating an annual tracker poll, specific to Northern Ireland, to measure public attitudes and levels of trust.

These figures also reinforce the need for a strong governance and ethical framework around AI, particularly in the public sector, drawing upon international principles and best practice.

AI can also be framed positively in terms of the the citizen engagement experience alongside better public service outcomes. Michaela Black, Professor of Artificial Intelligence at Ulster University, has stressed how AI can be an empowering tool for citizens, providing the scope for citizens to resolve challenges independently. She stresses that this may be particularly advantageous in circumstances where engagement with a human agent is either unavailable or impractical.[155]

Further, as articulated earlier, there is a case for considering some of the structures put in place in Scotland and Ireland, for example, to include a wider range of voices, including non-governmental participants.

In addition, there is a clear argument for ensuring that the voices of workers and their representatives are heard in terms of how changes in the workplace may unfold. Some lessons from the social partnership engagement in Wales as highlighted earlier could be helpful in this regard.

Transparency surrounding the operation of AI tools is also a significant issue in engendering trust. The UK Government has developed the Algorithmic Transparency Recording Standard (ATRS) as a framework to enhance transparency, through disclosure of information on public bodies' use of algorithmic and AI tools to influence decision-making processes.[156]

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155 Agenda NI, How AI can enhance public services, February 2025. www.agendani.com/how-ai-can-enhance-public-services/ [Accessed 21 May 2025]

156 UK Government, Algorithmic Transparency Recording Standard Hub, www.gov.uk/government/collections/algorithmic-transparency-recording-standard-hub [Accessed 19 May 2025]

To enable transparency, information should be supplied regarding:

- The functionality of algorithmic tools.

- Their role in decision-making processes.

- The specific problems they address.

- The rationale behind their use.

- Ownership and responsibility for these tools.

The ATRS has become mandatory in 2024 for all UK government departments, but implementation is being rolled out in phases. As of late 2024, only nine algorithmic systems had been disclosed on the public register, raising concerns about compliance and transparency. This has been criticised by the House of Commons' Public Accounts Committee.[157] However, this situation seems to have improved since the data was analysed in January 2025.

The AI Commission for Health and Social Care in Wales has also endorsed the use of ATRS[158].

Scotland has implemented its own AI Registry. This is presented as providing:

> *"... information on the Artificial Intelligence (AI) systems in use or in development within the Scottish public sector. Using the Register, you can get to know the basics of those AI systems, or examine them in more detail, based on your own interests. You are also invited to ask us questions and give us feedback, to help us develop trustworthy, ethical and inclusive AI systems."*[159]

It is notable that Scotland has become the first part of the UK to make it mandatory to register any use of Artificial Intelligence (AI) within the public sector.[160]

157 Public Accounts Committee, Uphill struggle ahead for Govt's use of AI as PAC report reveals the scale of the challenge, 26 March 2025 https://committees.parliament.uk/committee/127/public-accounts-committee/news/206078/uphill-struggle-ahead-for-govts-use-of-ai-as-pac-report-reveals-the-scale-of-the-challenge/ [Accessed 21 May 2025]

158 Welsh Government, The AI Commission for Health and Social Care endorses the algorithmic transparency recording standard (ATRS) 19 September 2024, https://www.gov.wales/ai-commission-health-and-social-care-endorses-algorithmic-transparency-recording-standard-atrs?utm [Accessed 21 May 2025]

159 scottishairegister.com/ [Accessed 22 May 2025]

160 Scottish Government, Increasing AI transparency, 26 March 2024, www.gov.scot/news/increasing-ai-transparency/?utm [Accessed 21 May 2025]

4.1.3 Risks

The most comprehensive articulation of the risks from Artificial Intelligence and policy interventions can be found in the International AI Safety Report published in January 2025 in advance of the Paris AI Summit the subsequent month. This is the collaborative work of 96 international experts. The authors recognise that assessment of risk and mitigation is a fluid area.[161]

Risks collated via the International AI Safety Report

Malicious Use

- Harm to individuals through fake content: Malicious actors can currently use general-purpose AI to generate fake content that harms individuals in a targeted way. These malicious uses include non-consensual 'deepfake' pornography and AI-generated CSAM, financial fraud through voice impersonation, blackmail for extortion, sabotage of personal and professional reputations, and psychological abuse.

- Manipulation of public opinion: General-purpose AI makes it easier to generate persuasive content at scale. This can help actors who seek to manipulate public opinion, for instance to affect political outcomes.

- Cyber offence: General-purpose AI can make it easier or faster for malicious actors of varying skill levels to conduct cyberattacks.

- Biological and chemical attacks: Recent general-purpose AI systems have displayed some ability to provide instructions and troubleshooting guidance for reproducing known biological and chemical weapons and to facilitate the design of novel toxic compounds.

Risks from Malfunctions

- Reliability issues: Current general-purpose AI can be unreliable, which can lead to harm. For example, if users consult a general-purpose AI system for medical or legal advice, the system might generate an answer that contains falsehoods.

- Bias: General-purpose AI systems can amplify social and political biases, causing concrete harm. They frequently display biases with respect to race, gender, culture, age, disability, political opinion, or other aspects of human identity. This can lead to discriminatory outcomes including unequal resource allocation, reinforcement of stereotypes, and systematic neglect of underrepresented groups or viewpoints.

161 International AI Safety Report, assets.publishing.service.gov.uk/media/679a0c48a77d250007d313ee/ International_AI_Safety_Report_2025_accessible_f.pdf [Accessed 21 May 2025]

- Loss of control: 'Loss of control' scenarios are hypothetical future scenarios in which one or more general-purpose AI systems come to operate outside of anyone's control, with no clear path to regaining control. There is broad consensus that current general-purpose AI lacks the capabilities to pose this risk. However, expert opinion on the likelihood of loss of control within the next several years varies greatly: some consider it implausible, some consider it likely to occur, and some see it as a modest-likelihood risk that warrants attention due to its high potential severity.

Systemic Risks

- Labour market risks: General-purpose AI, especially if it continues to advance rapidly, has the potential to automate a very wide range of tasks, which could have a significant effect on the labour market. This means that many people could lose their current jobs. However, many economists expect that potential job losses could be offset, partly or potentially completely, by the creation of new jobs and by increased demand in non-automated sectors.

- Global AI R&D divide: General-purpose AI research and development (R&D) is currently concentrated in a few Western countries and China. This 'AI divide' has the potential to increase much of the world's dependence on this small set of countries. Some experts also expect it to contribute to global inequality.

- Market concentration and single points of failure: A small number of companies currently dominate the market for general-purpose AI. This market concentration could make societies more vulnerable to several systemic risks.

- Environmental risks: Growing compute use in general-purpose AI development and deployment has rapidly increased the amounts of energy, water, and raw material consumed in building and operating the necessary compute infrastructure. This trend shows no clear indication of slowing, despite progress in techniques that allow compute to be used more efficiently.

- Privacy risks: General-purpose AI can cause or contribute to violations of user privacy, for example, sensitive information that was in the training data can leak unintentionally when a user interacts with the system.

- Copyright infringements: General-purpose AI both learns from and creates works of creative expression, challenging traditional systems of data consent, compensation, and control. Data collection and content generation can implicate a variety of data rights laws, which vary across jurisdictions and may be under active litigation. Given the legal uncertainty around data collection practices, AI companies are sharing less information about the data they use. This opacity makes third-party AI safety research harder

The OECD Expert Group also identified 38 potential future risks of AI, and prioritised their top ten, warranting enhanced policy focus[162]:

1. Facilitation of increasingly sophisticated malicious cyber activity, including on critical systems;

2. Manipulation, disinformation, fraud and resulting harms to democracy and social cohesion;

3. Races to develop and deploy AI systems cause harms due to a lack of sufficient investment in AI safety and trustworthiness;

4. Unexpected harm resulting from inadequate methods to align AI system objectives with human stakeholders' preferences and values;

5. Power is concentrated in a small number of companies or countries;

6. Minor to serious AI incidents and disasters occur in critical systems;

7. Invasive surveillance and privacy infringement that undermine human rights and freedoms;

8. Governance mechanisms and institutions unable to keep up with rapid AI evolutions;

9. AI systems lacking sufficient explainability and interpretability erode accountability; and

10. Exacerbated inequality or poverty within or between countries, including risks to jobs.

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162 OECD, Assessing Potential Future Artificial Intelligence Risks, Benefits and Policy Imperatives, November 2024, www.oecd.org/content/dam/oecd/en/publications/reports/2024/11/assessing-potential-future-artificial-intelligence-risks-benefits-and-policy-imperatives_8a491447/3f4e3dfb-en.pdf [Accessed 21 May 2025]

Risk Mitigation

This wide spectrum of risks poses many challenges and dilemmas for governments and other regulators and this is compounded by the rapid rate of technological change. This creates a gap between what AI companies know and what governments and other policy-makers know, and when. This makes pre-emptive or early mitigation difficult.

The International AI Safety Report also sets out risk mitigation techniques that are applicable to some of the highlighted risks.

Risk Mitigation Techniques

- Assessing general-purpose AI systems for risks is an integral part of risk management, but existing risk assessments are severely limited. Existing evaluations of general-purpose AI risk mainly rely on 'spot checks', i.e. testing the behaviour of a general-purpose AI in a set of specific situations. This can help identify potential hazards before deploying a model. However, existing tests often miss hazards and overestimate or underestimate general-purpose AI capabilities and risks, because test conditions differ from the real world.

- For risk identification and assessment to be effective, evaluators need substantial expertise, resources, and sufficient access to relevant information. Rigorous risk assessment in the context of general-purpose AI requires combining multiple evaluation approaches. These range from technical analyses of the models and systems themselves to evaluations of possible risks from certain use patterns.

- There has been progress in training general-purpose AI models to function more safely, but no current method can reliably prevent even overtly unsafe outputs. For example, a technique called 'adversarial training' involves deliberately exposing AI models to examples designed to make them fail or misbehave during training, aiming to build resistance to such cases.

- Monitoring – identifying risks and evaluating performance once a model is already in use and various interventions to prevent harmful actions can improve the safety of a general-purpose AI after it is deployed to users. Current tools can detect AI-generated content, track system performance, and identify potentially harmful inputs/outputs, though moderately skilled users can often circumvent these safeguards. Several layers of defence that combine technical monitoring and intervention capabilities with human oversight improve safety but can introduce costs and delays. In the future, hardware-enabled mechanisms could help customers and regulators to monitor general-purpose AI systems more effectively during deployment and potentially help verify agreements across borders. However, reliable mechanisms of this kind do not yet exist.

- Multiple methods exist across the AI lifecycle to safeguard privacy. These include removing sensitive information from training data, model training approaches that control how much information is learned from data (such as 'differential privacy' approaches), and techniques for using AI with sensitive data that make it hard to recover the data (such as 'confidential computing' and other privacy-enhancing technologies). Many privacy-enhancing methods from other research fields are not yet applicable to general-purpose AI systems due to the computational requirements of AI systems.

The OECD Expert Group identified 66 potential policy approaches to obtain AI benefits and mitigate risks, and once again narrowed them down to ten policy priorities[163]:

1. Establish clearer rules, including on liability, for AI harms to remove uncertainties and promote adoption;

2. Consider approaches to restrict or prevent certain "red line" AI uses;

3. Require or promote the disclosure of key information about some types of AI systems;

4. Ensure risk management procedures are followed throughout the lifecycle of AI systems that may pose a high risk;

5. Mitigate competitive race dynamics in AI development and deployment that could limit fair competition and result in harms, including through international co-operation;

163 OECD, Assessing Potential Future Artificial Intelligence Risks, Benefits and Policy Imperatives, November 2024, www.oecd.org/content/dam/oecd/en/publications/reports/2024/11/assessing-potential-future-artificial-intelligence-risks-benefits-and-policy-imperatives_8a491447/3f4e3dfb-en.pdf [Accessed 21 May 2025]

6. Invest in research on AI safety and trustworthiness approaches, including AI alignment, capability evaluations, interpretability, explainability and transparency;

7. Facilitate educational, retraining and reskilling opportunities to help address labour market disruptions and the growing need for AI skills;

8. Empower stakeholders and society to help build trust and reinforce democracy;

9. Mitigate excessive power concentration; and

10. Take targeted actions to advance specific future AI benefits.

It is worth considering whether any of these risks and the challenges of mitigation may be particularly acute in Northern Ireland. For example, given Northern Ireland's diverse nature and contested history, a greater premium is placed on equality and human rights protections. Related to this is the potential for exacerbated bias, be it actual or perceived. The approach to the collection and management of data will be key to managing this perception. Northern Ireland also has a disproportionate level of judicial reviews. The use of AI in decision-making opens up a potential risk to legal challenge. Transparency therefore becomes increasingly crucial in this region.

4.1.4 Regulation

Regulation of Artificial Intelligence for activities within Northern Ireland sits largely outside the control of devolved institutions and involves an intersection between UK and EU regulation.

The UK has so far adopted a single regulatory framework for AI and instead opted to rely on a range of pre-existing laws and regulations, and asked individual regulators to factor AI into their work[164]. The Government is holding off on more general regulation, but many analysts expect that comprehensive legislation is likely in the near future.

Copyright policy for Northern Ireland is set at the UK level, isn't devolved, and is administered by the UK Intellectual Property Office.

Copyright issues in terms of how AI models search text and mine data for generative AI outcomes are a source of contention in the UK political space.

The baseline is that the UK provides copyright protection for computer-generated works, under Section 9(3) of the Copyright, Designs and Patents Act (1988). There is a limited text and data-mining exception for only non-commercial research, unless a licence is obtained for commercial use. This legislation predates generative AI.

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164 Deloitte, The UK's framework for AI regulation, February 2024, www.deloitte.com/uk/en/Industries/financial-services/blogs/the-uks-framework-for-ai-regulation.html?utm= [Accessed 21 May 2025]

Initially the UK Intellectual Property Office proposed expanding the TDM exception to allow AI developers to mine any copyright-protected content, including for commercial purposes, without a licence, as long as they had lawful access to the content.

The government's proposal suggests an "opt-out" system, where creators must actively prevent their work from being used to train AI models, rather than an "opt-in" system requiring developers to seek permission.

This has received significant pushback from artists.[165]

This issue remains to be resolved and is currently being considered in Parliament as part of the Data (Access and Use) Bill.[166]

However, different states are taking varying approaches to copyright, with the EU taking a more restrictive or protective approach, whilst less regulated approaches exist in places such as the United States, Singapore and Japan. It is thus very challenging to maintain a common standard globally.[167]

As set out earlier, certain aspects of the EU AI Act currently apply to Northern Ireland under Article 13(3) of the Windsor Framework. The European Commission is currently proposing that all of the EU AI Act should apply to Northern Ireland under 13(4) of the Windsor Framework for the movement of goods.[168] This would be subject to agreement by the UK and the EU at the Withdrawal Agreement Joint Committee, further to the democratic safeguards engaged under Schedule 6B of the Northern Ireland Act 1998. In a Joint Committee meeting in April 2025, the UK Government sought an initial pause for a period of six weeks.[169]

Dr Adam Buick, Lecturer of Law at Ulster University, explores this issue in greater detail.

165 Guardian, Performing arts leaders issue copyright warning over UK government's AI plans, 18 March 2025, theguardian.com/culture/2025/mar/18/performing-arts-leaders-issue-copyright-warning-over-uk-governments-ai-plans [Accessed 21 May 2025]

166 Guardian, Ministers reconsider changes to UK copyright law ahead of vote, 4 May 2025 https://www.theguardian.com/technology/2025/may/04/ministers-uk-copyright-artificial-intelligence-parliament-vote? [Accessed 21 May 2025]

167 Tony Blair Institute, Rebooting Copyright: How the UK Can Be a Global Leader in the Arts and AI, April 2025, https://institute.global/insights/tech-and-digitalisation/rebooting-copyright-how-the-uk-can-be-a-global-leader-in-the-arts-and-ai [Accessed 21 May 2025]

168 Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (Text with EEA relevance) https://eur-lex.europa.eu/eli/reg/2024/1689/oj/eng [Accessed 21 May 2025]

169 Letter from Secretary of State for Northern Ireland to the Speaker of the NI Assembly, 24 Paril 2024, assets.publishing.service.gov.uk/media/680a21d77a11df940be1aa89/24.04.2024_-_SoSNI_to_Assembly_Speaker.docx.pdf [Accessed 21 May 2025]

The applicability of the EU's AI Act in Northern Ireland under the Windsor Framework – Adam Buick

As with any technology, the future use and adoption of AI will be shaped to a large extent by the application of laws and regulation. In Northern Ireland, this means not only UK law, but also certain EU laws under Article 13(3) and 13(4) of the Windsor Framework (formerly known as the Northern Ireland Protocol).[170]

While various EU laws may be relevant to the use of AI in Northern Ireland under the Windsor Framework, the most widely discussed is the AI Act (AIA) of 2024.[171] The AIA sets out a comprehensive framework for the regulation of AI which, inter alia, categorises AI systems depending on the level of risk they are judged to pose and their capabilities, with corresponding obligations to ensure safety, transparency, and protection for fundamental rights. The AIA entered into force in August 2024, with its various rules and provisions becoming applicable in stages until August 2027.[172]

Articles 103-107 and 109 of the AIA already apply in Northern Ireland under Article 13(3) as they amend existing legislation listed in Annex 2 of the Framework. These articles require the Commission to consider the AI Act's high-risk system requirements when adopting delegated and/or implementing acts with respect to AI systems functioning as safety components.[173] However, the specific requirements for high-risk AI systems are defined elsewhere in the Act and therefore would not apply without further action under the Framework, and the provisions neither create new delegated powers nor extend existing ones. As a result, the UK Government has expressed the view that these are likely to have limited, if any, impact in practice.[174]

The other provisions of the AIA will apply in Northern Ireland only if added to Annex 2 of the Windsor Framework under Article 13(4). In line with this process, the Council of the EU adopted a decision on 14 April 2025 which advocates the addition of the remainder of the AIA to Annex 2 "provided that they contain conditions and technical specifications for the placing on the market of products, or relate to the provision of services that may affect the free movement of products, and with the exception of Articles 102, 108 and

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170   Decision No 1/2023 of the Joint Committee established by the Agreement on the Withdrawal of the United Kingdom of Great Britain and Northern Ireland from the European Union and the European Atomic Energy Community

171   Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (AI Act)

172   See further Article 113 of the AI Act

173   Particularly in relation to vehicle approvals, marine equipment, rail interoperability, and forestry equipment.

174   Department for Science, Innovation and Technology, Explanatory memorandum, 17 July 2024

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

110".[175] However, the AIA will only be added to Annex 2 if the Commission and UK Government reach a decision to that effect at the EU-UK Withdrawal Agreement Joint Committee, subject to the democratic scrutiny mechanisms set out in Schedule 6B of the Northern Ireland Act 1998.[176] At the most recent meeting of the Joint Committee on 29 April 2025, such an agreement was not reached. In a statement, the UK government said that this is because the complexity of the AI Act requires further scrutiny, and "further dialogue with the EU under the terms of the Withdrawal Act" has been requested to discuss this.[177] It is therefore unclear at the time of writing whether or not the AI Act will be added to the Windsor Framework, and if so, under what terms.

One likely factor behind the UK Government's reluctance to agree to the Council's proposal is that the impact of doing so is far from clear. The fact that the provisions of the AIA would only apply as regards products and the provisions of services that may affect the free movement of products means that purely service-based AI systems (e.g. ChatGPT) would, presumably, remain outside of their scope, while products with integrated AI capabilities would be covered. However, uncertainty would arise in more ambiguous cases, especially given that the AIA was not drafted with a clear distinction between goods and services in mind.[178]

It has been suggested by some that AI systems used in Northern Ireland (and indeed the UK as a whole) were always likely to be largely in-line with the AIA because much of the Act applies to providers of AI systems based outside the EU if they have users within the EU (an example of the "Brussels Effect").[179] On this view, adding the AIA to Annex 2 of the Windsor Framework would have little practical impact. However, the UK Government has recently signalled a clear intention to distinguish its regulatory approach to AI from that of the EU.[180] The possibility that, for example, some AI-enabled medical devices available in hospitals in England, Scotland and Wales might be unavailable in Northern Ireland would be a challenge to the implementation of such an approach on a UK-wide basis.

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175 Council Decision (EU) 2025/800 of 14 April 2025. Articles 102, 108 and 110 of the AIA amend existing EU legislation that is not listed in Annex 2 of the Windsor Framework and thus not relevant to Northern Ireland

176 UK Parliament, 'Artificial Intelligence: Northern Ireland' (25 April 2025), available at https://questions-statements.parliament.uk/written-questions/detail/2025-04-25/48340, accessed 19 May 2025

177 Frank Hersey, 'UK rejects EU decision for AI Act to apply fully in Northern Ireland' (MLex, 2 May 2025) https://www.mlex.com/mlex/artificial-intelligence/articles/2332906/uk-rejects-eu-decision-for-ai-act-to-apply-fully-in-northern-ireland accessed 19 May 2025

178 Ryan Donnelly, 'European Commission advances view that AI Act applies in Northern Ireland' (Enz.ai, 27 March 2025) https://www.enz.ai/post/european-commission-advances-view-that-ai-act-applies-in-northern-ireland accessed 19 May 2025

179 See for example Lewis Silkin, 'NI businesses may be impacted by both EU and UK AI laws warns Lewis Silkin Belfast' (Northern Ireland Chamber of Commerce and Industry, 27 March 2025) https://www.northernirelandchamber.com/member-news/ni-businesses-may-be-impacted-by-both-eu-and-uk-ai-laws-warns-lewis-silkin-belfast/ accessed 19 May 2025

180 UK Government, AI Opportunities Action Plan, (13 January 2025) https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan accessed 19 May 2025

There has been minimal public debate on the extent to which the EU AI Act should apply to Northern Ireland. Although the UK Government has sought a six-week delay in the Joint Committee, the UK Government has yet to set out its formal position.

Given that most NI-based companies, and indeed many businesses from other jurisdictions, will seek to place their products on the EU market, there may be little practical difference from the full application of the Act. In common with other countries and regions, it will be advantageous for companies to build AI models in line with EU requirements. However, as Dr Buick set out above there is the potential for some complexities from different legal regimes.

In the Joint Committee, the Government will either concur with the European Union that the EU Act should apply in full or a prolonged period of arbitration will ensue.

One consequence of the latter may be a period of regulatory uncertainty for Northern Ireland.

Irrespective of the final decision and outcome, it is in Northern Ireland's interests for this matter to be resolved as quickly as possible to ensure certainty and stability for investors.

Recommendations

- A revised Open Data Strategy for Northern Ireland should be devised and implemented.

- The Executive should consider the creation of an NI Data Library and/or Regional Data Hub.

- Fresh legislation should be considered to break down some barriers to future data sharing between and within government departments and agencies.

- Opportunities to collaborate on data-sharing on a north-south basis should be fully explored.

- The Executive should embed the Northern Ireland Strategy and Action Plan with a strong ethical framework, drawing upon principles set out by a range of international bodies.

- Consideration should be given to the creation of an oversight or advisory body in Northern Ireland drawing lessons from the Scottish AI Alliance and similar bodies in other jurisdictions, to provide a wider range of academic and civic voices in the development of AI policy.

- In order to aid transparency and trust, consideration should be given to the publication of algorithmic details of AI models used within the Northern Ireland public sector in line with the UK Government's Algorithmic Transparency Recording Standard or using the model of the Scottish AI Registry.

- The Executive should devise an AI Communications plan to explain how it is using AI in the public sector, to help build and sustain trust.

- The Executive should facilitate an annual tracker poll to assess attitudes and levels of trust in Northern Ireland towards AI.

- Consideration should be given to risks that could have a disproportionate impact on Northern Ireland.

- The EU and UK should reach a conclusion on application of the EU AI Act to Northern Ireland as quickly as possible in order to provide certainty to the business community and other stakeholders.

4.2 Key Strategic Driver: Infrastructure and Sustainability

The functioning of artificial intelligence tools and systems depends on the provision of data centres. Data centres predate the current AI revolution and serve as early phases of digitisation. At present, data centres are a significant focal point for investment from both governments and the private sector, driven by the AI revolution. The World Economic Forum explains:

> Data centres are not just digital infrastructure, they're high-value assets that enable innovation ecosystems, create high-skilled jobs and improve digital resilience. Hosting a regional or hyperscale data centre can help an economy attract further investment in complementary industries, such as cloud services, fintech, e-commerce and AI, boosting competitiveness across sectors.[181]

For example, the European Union is seeking to facilitate €20 billion of investment in AI gigafactories.[182]

Data will often be stored on site by organisations, but increasingly it is more efficient and effective to outsource. The size of the resultant data centres can vary considerably.

Affordable, reliable and sustainable electricity supply will be a crucial determinant of AI development, and countries that can deliver the energy required at speed and scale, will be best placed to benefit.[183]

However, AI presents a range of challenges and opportunities in relation to energy use, and wider implications for climate change objectives.[184] The operation of AI models is much more energy intensive than other IT solutions.

Accordingly, data centres are major users of electricity. For example, ChatGPT uses 10 times more electricity than a Google search. A single ChatGPT query requires 2.9 watt-hours of electricity, compared with 0.3 watt-hours for a Google search.[185]

181 World Economic Forum, This is the state of play in the global data centre gold rush, April 2025, www.weforum.org/stories/2025/04/data-centre-gold-rush-ai/ [Accessed 21 May 2025]

182 Guardian, EU to build AI gigafactories in €20bn push to catch up with US and China, 9 April 2025, www.theguardian.com/technology/2025/apr/09/eu-to-build-ai-gigafactories-20bn-push-catch-up-us-china [Accessed 21 May 2025]

183 International Energy Agency, Energy and AI, April 2025, www.iea.org/reports/energy-and-ai [Accessed 21 May 2025]

184 World Economic Forum, This is the state of play in the global data centre gold rush, April 2025, www.weforum.org/stories/2025/04/data-centre-gold-rush-ai/ [Accessed 21 May 2025]

185 Goldman Sachs, AI is poised to drive 160% increase in data center power demand, May 2024, www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand [Accessed 21 May 2025]

The above International Energy Agency (IEA) report forecasts that processing data, mainly for AI, will consume more electricity in the US alone by 2030 than the manufacturing of steel, cement, chemicals and all other intensive goods combined.[186] Goldman Sachs estimates a 160pc increase in demand by 2030.[187] The IMF has stressed, "the importance of aligning energy policies with AI development to support this technological revolution, while mitigating environmental impacts.[188]"

Access to water for coolant purposes is also a major consideration. Data centres are heavy users of water and large data centres can use millions of gallons of water per day.

This level of demand poses questions regarding the environmental sustainability of data centres and implications for meeting the net-zero objectives of the Paris Agreement. However, current mitigations exist, and others may be developed.

AI itself carries considerable potential to be a factor in climate modelling. It could be used to track emissions and pollution, drive investment in renewables and associated infrastructure, maximise the efficiency of renewable energy, a smart-grid and other climate change mitigation measures. For example, the Brookings Institution has argued that AI can help with generation, transmission and distribution through load forecasting, predictive maintenance, smart grid, and cyber security protection.[189]

The IEA[190] also recognises that AI is being increasingly deployed by energy companies to transform and optimise electricity generation and transmission, and energy consumption, and notes the role AI can play in balancing electricity networks that are becoming more complex, decentralised and digitalised. It also adds that there is significant potential for AI-led optimisations to make heating and cooling systems in buildings more efficient, and their electricity use more flexible.

Despite this, it also sets out that the energy sector itself faces barriers to realising the widespread adoption of AI, including missing or inadequate access to data and digital infrastructure and skills, as well as persistent digital and physical security concerns, which often supersede potential efficiency gains. It notes that the prevalence of AI-related skills is much lower in the energy sector compared with other sectors.

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186 International Energy Agency, Energy and AI, April 2025, www.iea.org/reports/energy-and-ai [Accessed 21 May 2025]

187 Goldman Sachs, AI is poised to drive 160% increase in data center power demand, May 2024, www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand [Accessed 21 May 2025]

188 IMF, Power Hungry: How AI Will Drive Energy Demand, April 2025, www.imf.org/en/Publications/WP/Issues/2025/04/21/Power-Hungry-How-AI-Will-Drive-Energy-Demand-566304 [Accessed 21 May 2025]

189 Neil Baily and Aiden T. Kane, AI in the Electricity Sector: Optimizing Grid Management and Energy Use, Brookings Institution, April 2025, www.brookings.edu/wp-content/uploads/2025/04/20250401_CRM_BailyKane_AICaseStudies_Elec_FINAL.pdf [Accessed 21 May 2025]

190 International Energy Agency, Energy and AI, April 2025, www.iea.org/reports/energy-and-ai [Accessed 21 May 2025]

It remains unclear whether AI will continue to place a net drag on meeting climate change objectives, or whether growth in renewable energy sources, the benefits from AI towards greater efficiency in the energy sector overall, and improvements in technology will fully mitigate the losses. The IEA reports that, at present, half of the global growth in data centre demand is being met by renewables, supported by storage and the broader electricity grid.

Several factors may mitigate or exacerbate this potential tension.

Firstly, the level of energy demands is dependent on the nature of the AI model used. Notably, Deepseek offers the potential for a much more efficient and less energy-intensive way forward. This could be matched by other technological efficiencies in data centres. However, these efficiencies may in turn be outweighed by growing demand for AI over the coming years.

Secondly, the development and use of renewables may increase significantly, and fully cover the energy demands of AI. It is possible that some data centres could be fully sustained by renewable energy, both in terms of primary and back-up sources.[191] However, Goldman Sachs sees data centre carbon emissions doubling by 2030.[192]

Thirdly, there is the potential for the heat generated from data centres to be recycled. For example, the UK has highlighted such a scheme.[193]

Fourthly, in terms of cooling, air and liquid immersion options are viable alternatives to the use of water, but raise other challenges in terms of efficiency and cost. Some companies are exploring closed-loop systems or recycled greywater to reduce freshwater dependence.

How all of these factors will interact remains fluid and uncertain, and will be the subject of ongoing research, analysis and debate.

It is conceivable that all data centre requirements could be met extra-territorially. Major investments globally are serving more than the domestic needs of their locations. However, there may be a number of rationales for encouraging local provision of data centres.

191 HSBC, Data centres: The key infrastructure for digitisation, April 2025, www.gbm.hsbc.com/en-gb/insights/innovation/data-centres-the-key-infrastructure-for-digitisation [Accessed 21 May 2025]

192 Goldman Sachs, AI is poised to drive 160% increase in data center power demand, May 2024, www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand [Accessed 21 May 2025]

193 www.gov.uk/government/news/thousands-of-homes-to-be-kept-warm-by-waste-heat-from-computer-data-centres-in-uk-first [Accessed 21 May 2025]

Firstly, it may be driven by regulatory considerations regarding data security including access to sensitive and/or personalised data, more efficient and faster access, which may be crucial for certain activities for example financial services, security of and access to sensitive data. Notably, the creation of local IT infrastructure such as data centres represents key economic investment and could provide additional economic opportunities.

Secondly, whilst data centres may not create and sustain many direct jobs, there could be considerable indirect economic benefits as articulated above by the World Economic Forum.

Thirdly, whilst global cloud solutions provide economies of scale, local solutions may be necessary where matters of compliance, security, performance, and resilience are at a premium. Many organisations will likely look for mixed approaches between local solutions and extra-territorial cloud alternatives.

Fourthly, the needs of data centres, and the associated increased demand for energy, may serve as a driver for further investment in the electricity grid and other infrastructure to the wider benefit of the economy and society.

This begs the question as to what the likely future demand for data centres within Northern Ireland is going to be, how their development will sit alongside Northern Ireland's climate change legislative requirements, and how practical issues regarding access to electricity and water will be met.

Furthermore, investment in data centres in Northern Ireland could become an option for organisations and governments in other jurisdictions. In a rapidly expansionary market for data centres, investors are looking to a broad range of locations, particularly where both the local infrastructure and connectivity is strong.

For comparison, it is worth examining the situation in the neighbouring jurisdictions of Ireland and Scotland.

As of 2025, the number of data centres in Ireland varies depending on the source and criteria used for classification, but is at least 80 and potentially over 100.[194]

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194 www.theguardian.com/world/2024/feb/15/power-grab-hidden-costs-of-ireland-datacentre-boom?utm
     [Accessed 22 May 2025]

In terms of associated energy demands, government data published by the Central Statistics Office in July found the total energy use by datacentres rose from 5% in 2015 to 21% of national consumption in 2023.[195] This reflects an intensity in Ireland well above the international average. At present, data centres worldwide consume 1-2% of overall power, likely rising to 3-4% by the end of the decade.[196]

Concerns have been expressed as to the sustainability of this approach in Ireland.[197] Fears of blackouts led Ireland's grid operator to halt new data centres near Dublin until 2028.[198]

As set out in the Ireland sub-section of the Comparative section of this document, data centre policy was a key aspect of the Programme for Government of the new Irish Government. The Commission for Regulation of Utilities is currently consulting in relation to large energy users:

> **"The purpose of this proposed decision paper is to set out a potential pathway for connection applications for new data centre customers to the electricity grid with due regard to security of supply and network constraints while minimising, where possible, potential impacts on national renewable energy targets and carbon emissions.**
>
> **"Ireland has ambitious targets for renewable energy production and has had significant success in the delivery of renewable energy projects to date. The scale of these targets is a strong signal of Ireland's potential to become a global leader in renewable energy production. Ireland is also a world leader in digital technologies, and the R&D and manufacturing of pharmaceuticals, biotechnology and ICT infrastructure and devices. Many data centres have invested in setting up and expanding their operations in Ireland, providing employment opportunities and data services for other enterprises."[199]**

In Scotland, an action plan for green data centres and digital connectivity has been in place since 2021.[200]

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195 Central Statistics Office, Data Centres Metered Electricity Consumption 2023, 2024 "https://www.cso.ie/en/releasesandpublications/ep/p-dcmec/datacentresmeteredelectricityconsumption2023/keyfindings/ [Accessed 21 May 2025]

196 Goldman Sachs, AI is poised to drive 160% increase in data center power demand, May 2024, www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand [Accessed 21 May 2025]

197 Guardian, AI-fuelled cloud storage boom threatens Irish climate targets, report warns, 10 December 2024, https://www.theguardian.com/world/2024/dec/10/ai-fuelled-cloud-storage-boom-threatens-irish-climate-targets-report-warns?utm [Accessed 21 May 2025]

198 AP, Ireland embraced data centers that the AI boom needs. Now they're consuming too much of its energy, 19 December 2024, https://apnews.com/article/ai-data-centers-ireland-6c0d63cbda3df740cd9bf2829ad62058?utm

199 Commission for Regulation of Utilities, Review of Large Energy Users Connection Policy 2025, consult.cru.ie/en/consultation/review-large-energy-users-connection-policy [Accessed 21 May 2025]

200 Scottish Government, Green datacentres and digital connectivity: vision and action plan for Scotland, 2021 https://www.gov.scot/publications/green-datacentres-and-digital-connectivity-vision-and-action-plan-for-scotland/ [Accessed 21 May 2025]

The Scottish Government has been marketing Scotland as an investment location for data centres, highlighting their renewable generation capacity. There is also a recognition of constrained opportunities due to issues with the national grid. The Infrastructure Commission for Scotland has recommended consideration of the future data requirements and data potential for all new publicly funded infrastructure and the use of digital services associated with the assets.[201]

Arising from the AI Opportunities Action Plan, an AI Energy Council has been created by the UK Government:

> *"Working with energy companies to understand the energy demands and challenges which will fuel the technology's development – this will directly support the government's mission to become a clean energy superpower by tapping into technologies like small modular reactors.[202]"*

Expressions of interest were also sought by the UK Government in relation to AI growth zones. Potential investments in Northern Ireland were eligible for this call.[203]

There is a question for Northern Ireland in terms of what basic level of data centres may be required over the coming years, whether Northern Ireland should be addressing capacity issues in other jurisdictions, and how the planning, energy and water systems can respond to additional demand.

NI has nine data centres at present, 4 in Belfast, 4 in Derry/Londonderry, and 1 in Coleraine.[204] Others are in development, including the notable 'Atlantic Hub' in Foyle. This project encompasses two large-scale campuses: one at the Foyle Port Innovation Park in Maydown and another at a site in Donegal. At full build-out, the 12-hectare site is projected to house four buildings, offering up to 100MW of power capacity and approximately 1 million square feet (93,000 sqm) of technical space.[205] There are also further potential developments at Kilroot and Ballykelly.[206] These investments are close to the Project Kelvin transatlantic fibre landing station, providing direct connectivity between Northern Ireland and North America and sources of renewable energy.

201 Scottish Government, Infrastructure Investment Plan 2021-22 to 2025-26 Progress Report for 2023-2024, 2024, ww.gov.scot/publications/infrastructure-investment-plan-2021-22-2025-26-progress-report-2023-2024/pages/3/ [Accessed 21 May 2025]

202 Gov.uk, AI Energy Council to ensure UK's energy infrastructure ready for AI revolution, 8 April 2025, www.gov.uk/government/news/ai-energy-council-to-ensure-uks-energy-infrastructure-ready-for-ai-revolution [Accessed 21 May 2025]

203 UK Government, AI Growth Zones: expression of interest, www.gov.uk/government/publications/ai-growth-zones-expression-of-interest/ai-growth-zones-submit-an-expression-of-interest?#local-regional-authorities [Accessed 21 May 2025]

204 https://baxtel.com/data-center/northern-ireland?ut++=&lat=54.87289036195773&lng=-6.56081282414128&distance=76294.95177334399 [Accessed 22 May 2025]

205 https://www.datacenterdynamics.com/en/news/atlantic-hub-granted-planning-permission-for-first-data-center-at-derry-campus-in-northern-ireland/?utm= [Accessed 21 May 2025]

206 https://www.belfastlive.co.uk/news/foundational-infrastructure-needed-ni-risks-31008725 [Accessed 22 May 2025]

Invest NI doesn't offer financial assistance with respect to data centre development but has engaged with some potential investors regarding potential locations. Economy Minister, Caoimhe Archibald has stated:

> *"Invest NI recognises the important role that data centres play in modern digital infrastructure, in facilitating increased digitalisation of the economy and in supporting technology services and related activities such as cloud computing and artificial intelligence."*[207]

Investment in and planning of data infrastructure is a key element within many national and regional AI Strategies and Actions Plans. As noted above, it is a key strategic objective for both the Scottish and Irish Governments.

Energy is a devolved issue to the Northern Ireland Executive and is distinct from the rest of the UK in terms of energy infrastructure and policy. Northern Ireland is also part of the integrated Single Electricity Market (iSEM).

There may be scope for the Executive to consider whether a formal plan for managing the development of data centres in Northern Ireland should be devised, including an assessment of domestic and inward investment demand, and of the opportunities from existing and future renewable energy capacity. The potential positive and negative impacts on legislative climate change commitments would also need to be taken into account. This could include planning requirements regarding use of renewable energy or other net zero technologies.

Russell Smyth, Head of Sustainable Futures at KPMG, has argued that:

> *"The creation of a green data centre strategy in Northern Ireland would act as a significant draw for inward investment, ensure more efficient use of renewable energy, re-energise the development of renewable generation, and address many of this region's underlying structural issues."*[208]

Geoff McGimpsey of Foundry Marketing Partners has set out:

> *"Compute is the hidden currency of AI development. Training large language models, deploying smart industry applications, and scaling tech start-ups all rely on access to high-performance data centres – centres that need secure and reliable energy. And while Northern Ireland boasts academic excellence and an emerging innovation culture, it currently lacks the grid resilience and capacity that serious AI investment demands.*

207 Assembly Hansard, 24 February 2025, https://aims.niassembly.gov.uk/officialreport/report.aspx?&eveDate=2025/02/24&docID=428904 [Accessed 22 May 2025]

208 Russell Smyth, Green data centres: Key to Northern Ireland's economic future, November 2024, kpmg.com/ie/en/home/insights/2024/11/green-data-centres-esg.html, [Accessed 21 May 2025]

"As policymakers weigh up the future of enterprise zones, investment incentives, and technology clusters, the real litmus test will be infrastructure. Without the power, there will be no progress. And without compute, there will be no (earth-shattering) AI from NI."[209]

Further to this, consideration may be given to opportunities to collaborate on an all-island basis to better distribute the demand for data centres.

The Irish market is facing considerable capacity constraints, whilst in Northern Ireland there is already considerable untapped renewable capacity and the potential for further investment.

In 2024, the dispatch down figure for renewable energy in Northern Ireland was 26%, but by contrast the equivalent figure for Ireland was only 9%. In other words, a quarter of the generative capacity of renewables cannot be used due to a range of factors, primarily the capacity of the electricity grid.[210] Furthermore, despite a major surge in renewable energy in Northern Ireland over the past decade, more recently such development has stalled.

Northern Ireland is facing challenges related to weaknesses in the electricity grid, the speed of the planning system, and water and sewerage connections. If unaddressed, these may pose barriers to further developments. However, increased investment in renewable energy associated with the development of data centres may facilitate improvements to the grid.

Further challenges to north-south collaboration on data centre provision may also arise from regulatory differences.

Within Northern Ireland, opportunities for investment will be clearest in areas best aligned with the relative strength of the grid and, to a considerable extent, proximity to the sources of renewable energy. These will often be in rural areas. This introduces prospects for improving regional balance of economic inactivity within Northern Ireland, especially if the development of data centres opens up other concurrent economic opportunities.

209 https://www.linkedin.com.mcas.ms/pulse/newsletter-8-power-policy-pylons-rewiring-state-geoff-mcgimpsey-vybge/ [Accessed 22 May 2025]
210 Farmers Journal, Nearly 26 per cent of renewable electricity lost in Northern Ireland, 19 March 2025 www.farmersjournal.ie/more/northern-ireland/nearly-26-of-renewable-electricity-lost-in-northern-ireland-in-2024-860200, [Accessed 21 May 2025]

Recommendations

- The Executive should consider a formal plan for how the demand for the creation of additional data centres in Northern Ireland will be addressed, including an assessment of domestic and inward investment requirements, and identifying the capacity from existing and future renewable energy provision.

- The potential for collaboration between the Northern Ireland Executive and the Irish Government should be explored regarding the provision and location of data centres on an all-island basis.

- The potential further development regarding data centres should provide a further impetus to address infrastructure challenges in NI in relation to planning, the electricity grid and connections to NI water infrastructure.

- The ongoing development of data centres should be factored into NI's Climate Action Plans, both in terms of potential improvements in the efficiency of energy systems and/or negative impact on net zero targets.

- Consideration should be given to new planning requirements for data centres to ensure the use of renewable energy or other net zero technology.

4.3 Skills, Education and the Future of Work

The increased deployment of Artificial Intelligence brings immediate AI specific skills pressures, but also has the potential to radically reconfigure the wider labour market and change the skills landscape in terms of the profile and level of skills in demand.

This will pose challenges for policymakers in terms readjusting education and skills provision, and finding the right balance between anticipatory and reactive interventions.

The demand for certain roles or aspects of jobs will vary. AI may replace some jobs altogether, others may be relatively untouched, but it is likely in the plurality of cases that AI will change how job roles are conducted and make people more efficient and productive.

There are three key challenges for policymakers in Northern Ireland:

1. Understanding the evolving skills and workforce landscape in general

2. Determining how the skills landscape will develop in Northern Ireland, specifically

3. Implementing changes to skills and education policy, provision and practice

4.3.1 Understanding evolving skills and workforce landscape in general

There are a growing number of international studies and papers on the potential impact of AI on skills demand and the workplace. Different analysts and commentators perceive differential impacts, from significant net job creation to significant job losses and increased unemployment.

Whilst AI has the potential to drive productivity change and economic growth, labour market changes may be the most significant economic change arising from deployment of AI. This is a very embryonic area of study, and a considerable degree of caution needs to be applied to scenarios set out or conclusions made. However, the scale of change in the skills landscape and workplace may be so rapid and of such a magnitude that highly responsive – and potentially anticipatory action – by policymakers will be necessary.

Similar processes of technological change throughout modern history, whether that be electricity, the automobile, typewriter, PC, internet, and social media, have been associated with significant employment gain, including the emergence of new job roles.

There is a recognition that, in the first instance, pressures may build up for specific AI related skills, ensuring there is a sufficient pipeline of talent, in terms of sourcing enough people to employ in the fast-growing AI field specifically, and more broadly ensuring sufficient numbers of the workforce are AI-literate.[211]

Elina Mäkelä and Fabian Stephany analysed how AI alters the demand for human skills.[212] However, their data is based on the period from 2018-2023. They set out that:

> *"Results show that AI-focused roles are nearly twice as likely to require skills like resilience, agility, or analytical thinking compared to non-AI roles. Furthermore, these skills command a significant wage premium; data scientists, for instance, are offered 5–10% higher salaries if they also possess resilience or ethics capabilities. We observe positive spillover effects: a doubling of AI-specific demand across industries correlates with a 5% increase in demand for complementary skills, even outside AI-related roles. Conversely, tasks vulnerable to AI substitution, such as basic data skills or translation, exhibit modest declines in demand. However, the external effect is clearly net positive: Complementary effects are up to 1.7x larger than substitution effects. These results are consistent across economies, including the United Kingdom and Australia. Our findings highlight the necessity of reskilling workers in areas where human expertise remains increasingly valuable and ensuring workers can effectively complement and leverage emerging AI technologies."*

A key overarching assessment is undertaken in the World Economic Forum's Future of Jobs Report 2025, bringing together insights from 1,000 employers, 14 million workers, 22 industry sectors, 55 economies.[213] The WEF sets out:

1. What AI Can Do Well: process and analyse data; handle basic reading/writing tasks; support marketing and media creation; and execute repetitive technical tasks.

2. What AI Struggles With: emotional intelligence and active listening; physical skills and coordination; real-world sensory processing; and complex decision-making.

3. The Middle Ground: financial operations; basic tech implementation; quality control processes; and operational logistics.

211 Jobs AI will create? Here's the World Economic Forum view | World Economic Forum
212 Elina Mäkelä Fabian Stephany February 2025, Complement or substitute? How AI increases the demand for human skills [PAPER] AI at Work v3.docx
213 World Economic Forum, *The Future of Jobs Report 2025* (2024), https://www.weforum.org/docs/WEF_Future_of_Jobs_Report_2025.pdf. [accessed 21 May 2025]

The WEF further notes the following five fastest-growing jobs by 2030, in percentage terms.

1. Big Data specialists

2. Fintech engineers

3. AI and machine learning specialists

4. Software and applications developers

5. Security management specialists

The five roles that are expected to decline at the most rapid rate are:

1. Postal service clerks

2. Bank tellers and related clerks

3. Data-entry clerks

4. Cashiers and ticket clerks

5. Administrative assistants and executive assistants.

The WEF explains that this table illustrates "Capacity of GenAI substituting a human in performing a given skill as a percentage share of all granular skills within each skill group. Analysis based on GPT-4o, with over 2800 granular skills from the Indeed database as of August 2024."[214]

214 World Economic Forum, The Future of Jobs Report 2025, January 2025
     www.weforum.org/publications/the-future-of-jobs-report-2025/ [Accessed 22 May 2025]
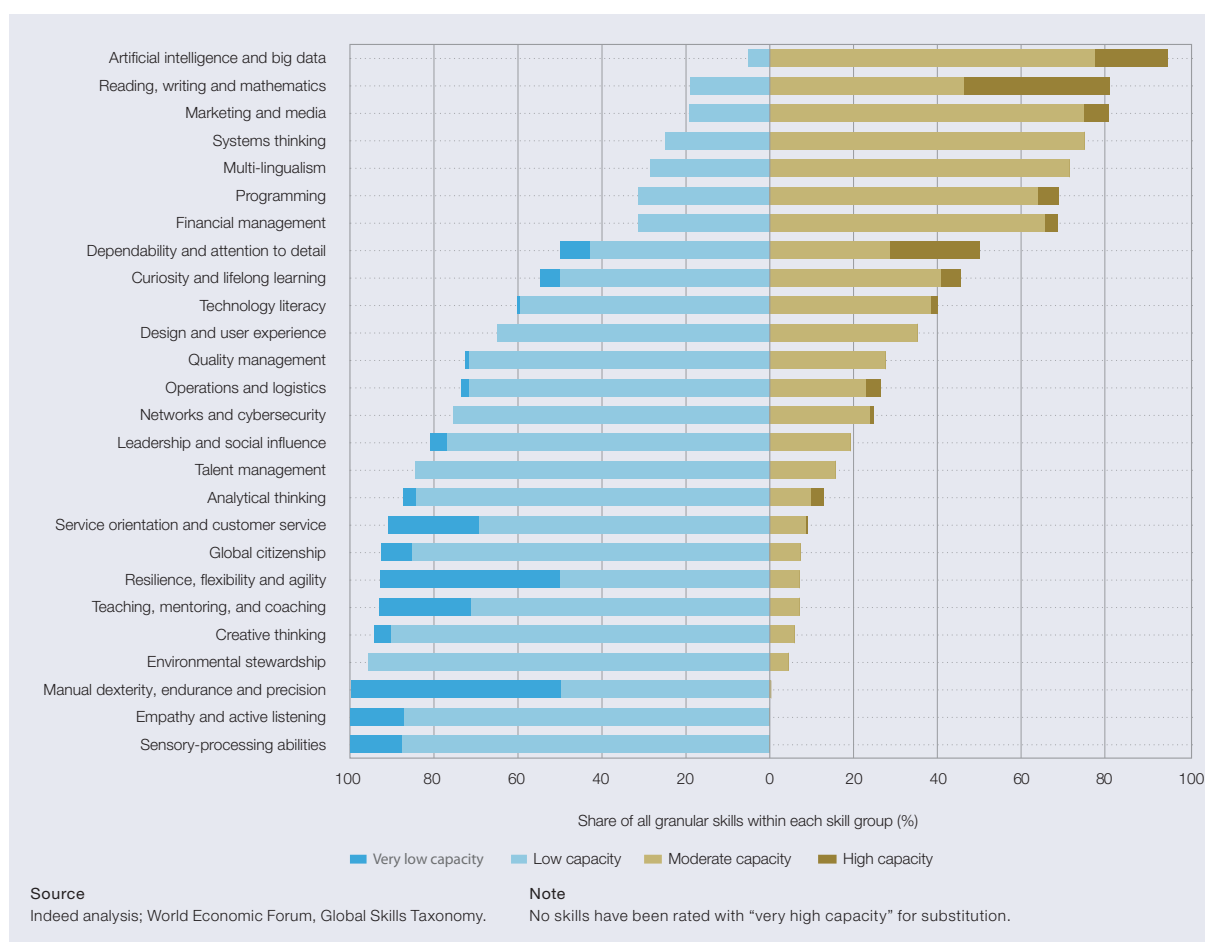
Current capacity for substitution by Generative AI, by skill group.

The WEF further notes that 39% of worker's core skills are set to change by 2030.

Molly Kinder, Xavier de Souza Briggs, Mark Muro and Sifan Liu at the Brookings Institution have looked at the future of work in the United States arising from AI.[215] They conclude:

> *"Existing generative AI technology already has the potential to significantly disrupt a wide range of jobs. We find that more than 30% of all workers could see at least 50% of their occupation's tasks disrupted by generative AI. And 85% of workers could see at least 10% of their work takes impacted.*

> *"Unlike previous automation technologies that primarily affected routine, blue collar work, generative AI is likely to disrupt a different array of "cognitive" and "nonroutine" tasks, especially in middle- to higher-paid professions.*

> *"Despite the high stakes for workers, we are not prepared for the potential risks and opportunities that generative AI is poised to bring."*

215 Molly Kinder, Xavier de Souza Briggs, Mark Muro and Sifan Liu, Generative AI, the American worker, and the future of work, Brookings Institution, October 2024, www.brookings.edu/articles/generative-ai-the-american-worker-and-the-future-of-work/ [Accessed 21 May 2025]

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

The authors set out that not only will AI impact upon routine and repetitive tasks, but it will have implications across a wider range of activities. The authors suggest that AI is capable of mimicking the kinds of non-routine skills and interactive skills viewed hitherto considered impossible for computers, including programming, prediction, writing, creativity, projecting empathy.

The research suggests that sectors face greatest exposure include those requiring advanced degree requirements, such as STEM pursuits, business, finance, architecture and engineering, and law, in addition to 'middle-skill' office and administrative support. This point is not to diminish the potential for a recalibrated demand for other high-level skills

By contrast, they anticipate that AI is less likely to disrupt blue collar roles, barring technological breakthroughs in robotics. Education, health care and community and social services are considered to have medium exposure.

They also note that tasks more likely to be automated have a greater proportion of female participation.

Their report further emphasises the importance of strategies to proactively address AI's impact on work and workers. This includes fostering worker engagement in AI design and implementation, enhancing worker voices through unions or other means, and developing public policies that ensure workers benefit from AI while mitigating harms such as job loss and inequality.

AI may therefore provide a significant boost to levels of productivity for individual organisations and economies overall. However, how those gains are distributed both within and between economies remains an open question. This has been considered in the earlier economic section of this report.

Overall, such reports tend to break down job assessment impacts into three categories:

- Replacement or disruption.

- Augmentation.

- Relatively unaffected.
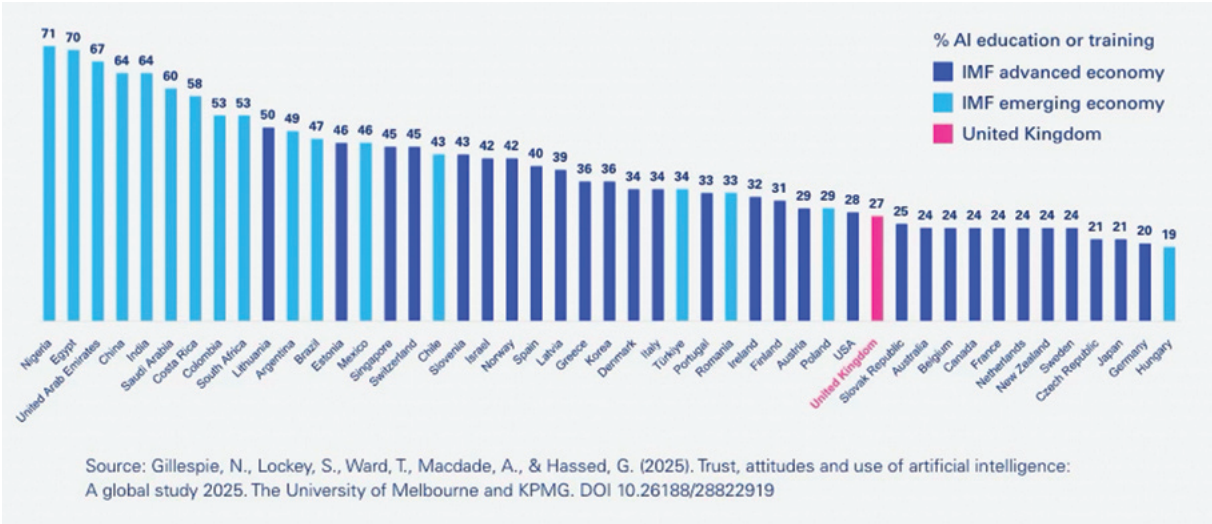

It is very likely that there will be a mixture of new job roles at higher skills levels, augmentation of existing roles – making people more efficient and freeing up time, and some displacement of jobs. AI literacy may emerge as a standard pre-requisite in the workplace, alongside a greater need for soft skills related to adaptability and problem-solving within an AI-augmented workplace.

The key challenge is to understand the relative impacts in each of those categories, and to plan policies accordingly. This impact, and the required policy response, will vary from society to society. To add to the scale of the challenge, given the rapid pace of developments in relation to Artificial Intelligence innovation and adoption, a balance between anticipatory and reactive interventions will need to be found.

Whilst there will be a different profile of demand and pressures at different skill levels, it is likely that AI will move the demand for skills proportionally up the skills ladder. However, unlike previous technological changes, short of further breakthroughs in terms of robotics-AI intersections, the pressure on roles is less likely to feature in manual or blue-collar employment, but rather across a range of office-based or white-collar jobs. In turn, AI may allow for more time to be focused on higher value activities and human interaction.

AI is not 100pc reliable. Its adoption is unlikely to replace a basic understanding of maths and use of language, and indeed AI literacy may be seen as being complementary to those foundations. Skills encompassing compiling AI inputs and critically assessing AI outputs will be key, alongside the correct application of ethical outcomes.

AI-literacy is not keeping pace with adoption. According to a KPMG survey[216], the UK is falling behind many other countries when it comes to AI training and literacy – out of the 47 countries surveyed, the UK is in the bottom third.

Source: Gillespie, N., Lockey, S., Ward, T., Macdade, A., & Hassed, G. (2025). Trust, attitudes and use of artificial intelligence: A global study 2025. The University of Melbourne and KPMG. DOI 10.26188/28822919

A graph showing the percentage of people in different countries who have received AI education or training. This shows UK is towards the bottom end of the pile, at 27%.

216 [1]KPMG, *UK Attitudes to AI*, KPMG International, accessed May 20, 2025, https://kpmg.com/uk/en/insights/ai/uk-attitudes-to-ai.html.

Despite comparatively low levels of training, a majority of UK workers report using AI, and for many it is now perceived as indispensable. However, not all are using it effectively and some report making mistakes linked to limitations in capacity to evaluate results.

Gender

Analyses suggest that there are some significant gender differences in terms of how AI is being used and the nature of job roles that it will impact.

In order to maximise opportunity and productive capacity, this raises a challenge for policy-makers to go beyond current policies and programmes to address inequalities and differences, drive and sustain gender parity. The dynamism of the AI transformation offers the opportunity to break with longstanding gender disparities.

WEF Gender Parity in the Intelligent Age (March 2025) sets out that women are disproportionally represented in jobs that are subject to disruption or augmentation by generative AI, whereas men are over-represented in job roles that are largely insulated.[217]

A recent paper from researchers at Harvard Business School, Berkeley, and Stanford synthesises data from 18 studies covering more than 140k individuals worldwide.[218] Their findings include that women are less likely than men to use GenAI tools, have lower familiarity with them, and are more likely to associate AI with unethical activities and risks. Lower AI adoption by women creates a further risk of widening the existing gender gap in pay and job opportunities. Furthermore, AI systems trained primarily on male-generated data may create a feedback loop that widens existing gender disparities in technology development and adoption.

4.3.2 Determining how the skills landscape will develop in Northern Ireland

Arising from this general overview and assessment, the question then becomes one of determining how skills and workplace projections may apply in the particular circumstances of Northern Ireland.

Despite some significant progress over recent decades, compared to other advanced economies, Northern Ireland retains a disproportionate profile of lower or unskilled workers. Common features of this situation include relatively high levels of economic inactivity, education underachievement, early school leavers and young

217 World Economic Forum, *Gender Parity in the Intelligent Age: 2025* (Geneva: World Economic Forum, 2024), https://www.weforum.org/publications/gender-parity-in-the-intelligent-age-2025/.

218 Nicholas G. Otis, Solène Delecourt, Katelyn Cranney Rembrand Koning, Global Evidence on Gender Gaps and Generative AI, 2025, www.hbs.edu/ris/Publication%20Files/25-023_8ee1f38f-d949-4b49-80c8-c7a736f2c27b.pdf [Accessed 21 May 2025]

people not in education, employment or training. Northern Ireland's participation rate in life-long learning is lower than the UK average, whereas the UK as a whole compares unfavourably with the OECD average.

This skills profile is a major contributory factor in Northern Ireland's productivity gap with neighbouring jurisdictions. Recent research published by the Economic and Social Research Institute in Ireland sets out many of these issues in a comparative context.[219]

Local employers continue to report skill shortages in certain job roles. There are also key skills pressures in aspects of the public sector, most notably within the health workforce. Northern Ireland's offering in high-level skills is also central to current growth initiatives, and forms a key element of the inward investment narrative.

The latest version of the NI Skills Barometer[220], produced by the Ulster University Economic Policy Centre, indicates an undersupply of skills, with a shortage of 5,400 individuals per annum under a high growth scenario over the next decade. Notably, there are also growing pressures in terms of undergraduate and postgraduate provision, with per annum pressures of 2,290 at Level 6 and 790 at Levels 7 and 8.

The current Northern Ireland Skills Strategy[221] has three key goals:

1. Increasing the proportion of individuals leaving Northern Ireland higher education institutions with first degrees and post-graduate qualifications in narrow STEM subjects;

2. Increasing the proportion of the working age population with qualifications at level 2 and above; and

3. Increasing the proportion of the working age population with qualifications at level 3 and above

With reference to the context for AI and other automation, the Strategy recognises that:

> *As our economy develops and automation displaces a growing number of jobs and job roles, the demand for higher level skills will continue to grow. It is vital, therefore, that we support as many people as possible to reach the qualification levels that will offer viable and sustainable opportunities in our emerging labour market.*[222]

219 Frances McGinnity, Adele Bergin, Seamus McGuinness, Emer Smyth, Sharing the Island: Economic and social challenges and opportunities: Evidence from an ESRI research programme, April 2025, www.esri.ie/publications/sharing-the-island-economic-and-social-challenges-and-opportunities-evidence-from-an [Accessed 21 May 2025]

220 Department for the Economy, Skills Barometer 2023 – 2033, February 2025, www.economy-ni.gov.uk/publications/skills-barometer-2023-2033 [Accessed 21 May 2025]

221 Department for the Economy, Skills Strategy for Northern Ireland, 2022 www.economy-ni.gov.uk/articles/skills-strategy-northern-ireland [Accessed 21 May 2025]

222 Department for the Economy, Skills Strategy for Northern Ireland, 2022 www.economy-ni.gov.uk/articles/skills-strategy-northern-ireland [Accessed 21 May 2025], p8

And

Technological change is a major strategic issue which is having a pervasive influence across our society and labour market. Advanced digital skills are essential for the innovation potential, and continued competitiveness, of the businesses in our key strategic clusters and the development of the knowledge-economy more broadly. Meeting this challenge is vital to the realisation of our economic potential. In tandem with a theme that runs throughout this strategy, however, our focus on digital is as much about improving social equality as it is about economic growth.[223]

Working assumptions in line with other technological revolutions will likely see more pressure at higher levels overall, and may see less demand at lower skills levels and a further decline in jobs that can be sustained with low qualifications.

Artificial Intelligence may make the skills pressures at higher levels within Northern Ireland more acute. With NI starting from a lower base and facing a range of structural issues, the scale of challenge to remain competitive may be greater.

In the context of the potential for AI to provide the means to close Northern Ireland's productivity gap, provided the right policies and investments are put in place, addressing this skills challenge becomes even more crucial. AI has the potential to address or overcome some of the structural challenges arising from skills gaps, yet its deployment will require effective management and utilisation.

In some areas, AI adoption and productivity gains may address some of the gaps for intermediate and higher-level skills. For example, in Northern Ireland, there are also considerable workforce pressures in the health service. This is regarded as core to improved outcomes and performance. Through a spectrum of technological interventions, AI may help to address many of these areas. It is also worth noting teacher workload is an ongoing source of tension, with AI having the potential to address some of the issues. And by contrast to the situation in Whitehall, where the UK Government is seeking to reduce civil service headcount, in Northern Ireland there are a range of pressure points.

This initial analysis points to the need for more detailed research to be undertaken to the potential skills demands and changes in the nature of the workforce arising from increased AI deployment and adoption.

223 Department for the Economy, Skills Strategy for Northern Ireland, 2022 www.economy-ni.gov.uk/articles/skills-strategy-northern-ireland [Accessed 21 May 2025], p10

In conjunction with the Department for the Economy, Matrix (the Northern Ireland Science Industry Panel) has commenced a project entitled 'AI and the future of work". Matrix introduces it thus:

> *Artificial intelligence (AI) is advancing at an unprecedented pace, reshaping industries, workforce dynamics, and economic structures worldwide – "The Fourth Industrial Revolution" – As we continue to see businesses and employees working with and alongside new autonomous technology in highly productive ways limited only by the user's imaginations. These developments present enormous opportunities especially for a small nation such as Northern Ireland which is already punching above its weight in cutting-edge technologies for satellite systems, propulsion, and space-based communications as demonstrated in the recent Matrix Growing Space Industry report.*[224]

The report is due to be released in the early autumn.

Northern Ireland is not alone in facing this challenge. Assessing the nature and scale of this challenge is a major theme of Ireland's AI Advisory Council Report to Government: "Helping to Shape Ireland's AI Future" from February this year[225].

> *"... it is not known today what exact impact AI will have on the total demand for labour or income distribution in Ireland. Significant research is underway internationally, but it will not be able to resolve many fundamental uncertainties for some time. The nascent nature of AI adoption in Ireland and existing low unemployment could mask early signals of AI driven changes to work. What is easier to predict is that the structure of work will change – previously valuable human skills will see a decline in demand and new types of jobs will emerge. We have high confidence this will occur and will be widespread. There is a reasonable likelihood that the pace of these changes will be unprecedented in our economy. Ireland needs to develop policies that can be sufficiently robust to a wide range of possible future scenarios and timetables. To deliver this, policy makers need better measurement and insights into what is occurring."*

There may be opportunities for dialogue and collaboration on AI-related skills development on a north-south and east-west basis.

224 Matrix NI, matrixni.org/about/current-work/ [Accessed 21 May 2022]

225 Ireland's AI Advisory Council Report to Government: "Helping to Shape Ireland's AI Future", February 2025, enterprise.gov.ie/en/news-and-events/department-news/2025/february/irelands-ai-advisory-council-report-to-government-helping-to-shape-irelands-ai-future.html [Accessed 21 May 2025]

4.3.3 Implementing changes to the skills and education policy, provision and practice

A very broad range of interventions will be required across all levels of education and skills provision to address a range of objectives.

These include:

- Ensuring the educational and training system is providing the necessary skills and knowledge for those directly involved in AI innovation and development, or using AI heavily within their work.

- Making wider changes to the educational and training system to take into account the changing nature of the work to ensure both that individuals have the practical and employability skills and knowledge to fully participate in the future labour market and that Northern Ireland is a competitive economy.

- Adapting how school, colleges and universities relay knowledge and skills.

- Addressing marginalisation from the labour market, and the intersection with the digital divide.

In some circumstances, responses may involve consolidation, adaptation and intensification of existing programmes. In other respects, new policies and programmes may need to be devised.

In response to a question in the Assembly, the Economy Minister, Caoimhe Archibald, recognised that AI is a fast-developing technology and the importance of keeping pace with the demand for skills.[226]

Overall, given the potential transformational significance of the AI revolution with the associated need for nations and regions to be competitive, there may a strong rationale for increased resources for skilling, in order to fully capture new opportunities available.

Fundamentally, there is a need for a skills strategy or action plan that encompasses the demand for AI-related skills and the wider changes to the skills landscape. This could take the form of a refresh and expansion of the current Digital Skills Action Plan or a fresh process and document. The Northern Ireland Skills Council could play a critical role in this regard.

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226 Northern Ireland Assembly Hansard 24 February 2025, aims.niassembly.gov.uk/officialreport/report.aspx?
&eveDate=2025/02/24&docID=428904 [Accessed 21 May 2025]

A broad range of steps should be considered.

- Careers advice should increasingly take into account the rapidly changing skills landscape and associated opportunities and challenges.

- Consideration should be given to the balance of subjects, courses and programmes offered within local colleges and universities. This would likely involve a greater focus on STEM subjects or alternatively STEAM in order to reflect some of the arts and humanities skills that may see increased demand due to AI governance and ethics requirements, including for example the forthcoming MSc in Ethical and Responsible Artificial Intelligence at Ulster University

- In light of potential gender imbalance projections in terms of AI adopted, enhanced attention on schemes to maximise inclusivity and mobilisation of talent may be required.

- AI literacy and numeracy may be more broadly offered across education, skills provision and training programmes. This could include offering micro-credentials and certificates in AI literacy

- AI literacy could be embedded within apprenticeship programmes, and greater flexibility given to the design and implementation of apprenticeships in AI-related areas may be required as the fast-moving needs of industry may move more quickly than frameworks can accommodate.

- Reflecting that most of future workforce is already in employment and the likely even greater departure from the notion of a person completing education in their teens or early 20s and having a linear career, a greater emphasis on life-long learning may be necessary, including greater provision of reskilling opportunities, such as for example Skill Up, and a review of the current policy against double public funding of primary degrees.

Michael Callaghan, Reader, School of Computing, Engineering & Intelligent Systems, Ulster University sets out the particular opportunity for AI to transform the education, skills and work landscape in this region.

Positioning the Region for AI's Transformative Impact on Education, Skills and Work

Northern Ireland's economic landscape is being rapidly reshaped by generative AI, with traditional and emerging sectors like manufacturing, agriculture, virtual production and services experiencing unprecedented transformation.

In Belfast's burgeoning tech corridor and across the region's innovation hubs, businesses are increasingly integrating AI solutions that fundamentally alter skill requirements for the workforce. Maintaining awareness of these technological shifts is no longer optional but essential for Northern Ireland's educators, policymakers, and industry leaders.[227]

The region's unique post-Brexit economic position creates both challenges and opportunities, making continuous monitoring of AI developments crucial for strategic workforce planning that addresses Northern Ireland's specific needs while preparing for cross-border collaboration in an AI-enhanced economy.

Educational institutions across Northern Ireland, from Ulster University's AI research centres to regional colleges in Derry and Newry, are working to bridge awareness gaps through dedicated world-leading programs[228], events and pioneering conferences[229] that connect current technological innovations with future skills requirements.

This awareness-building is particularly vital given Northern Ireland's distinctive demographic challenges and historically siloed educational pathways.

By cultivating broader understanding of generative AI's capabilities and limitations, Northern Irish stakeholders can develop more responsive training ecosystems that address both immediate skills shortages in emerging sectors and long-term workforce resilience.

This proactive approach positions Northern Ireland to leverage its compact size and strong community networks as advantages in creating nimble, future-ready educational frameworks and skills development that respond to AI's evolving impact on regional industries.

227 "UK universities warned to 'stress-test' assessments as 92% of students use AI." (2025, February 26). The Guardian. [Online]. Available: https://www.theguardian.com/education/2025/feb/26/uk-universities-warned-to-stress-test-assessments-as-92-of-students-use-ai [Accessed: May 20, 2025] and "Agency is Eating the World." (2025, April). [Online]. Available: https://giansegato.com/essays/agency-is-eating-the-world [Accessed: May 20, 2025]

228 "Trailblazing NI Report – Generative AI in Education." (2025, April). Education Authority Northern Ireland. [Online]. Available: https://www.eani.org.uk/trailblazing-ni-report-generative-ai-in-education [Accessed: May 20, 2025]

229 "AI leaders focus on impact on education." (2023, September 11). BBC News. [Online]. Available: https://www.bbc.co.uk/news/uk-northern-ireland-66774275 [Accessed: May 20, 2025] and "National Conference on Generative Artificial Intelligence in Education." (2024, June). Ulster University. [Online]. Available: https://www.ulster.ac.uk/conference/genaiedu-2024-june [Accessed: May 20, 2025]

Provision of Education

AI in Curriculum and Assessment

There is an ongoing debate in terms of how far AI can and should be incorporated into the curriculum in schools and in course content in colleges, apprenticeships and universities.

There are fears that AI may compromise academic standards, whilst others argue that AI skills will be integral to the workplace that the approach to learning should adjust and embrace this new reality with a standardised approach to the achievement of AI literacy for school pupils and college and university students.

The official and unofficial use of AI by students as part of the learning process will have implications for the nature of assessment, combined with the changing requirements for knowledge and skills. This may necessitate changes to the nature of teaching and learning. In turn, this raises considerations for the provision of AI literacy levels of teachers and lecturers.

There are a range of statistics emerging on the use of AI by school pupils. Different approaches taken to its official or unofficial use. At present, there is essentially an ad hoc situation, with policies only beginning to emerge. That approach risks embedding further inequalities.

Notably, the Education Authority is working with Nurture to implement AI-powered assessment and feedback tools using generative AI to streamline grading and provide personalised feedback.[230]

The Higher Education Policy Institute – Student Generative AI Survey – February 2005 reported that just under half (45%) of students had used AI while at school.[231]

The Irish AI Advisory Council has published a report on AI and education.[232] It recognises that AI is having a transformational impact on education at all levels, including the development of lesson plans, personalised learning for students, immediate and detailed feedback, and accessibility support for students with special needs.

230 Nurture Chosen to Deliver AI-Powered Assessment and Feedback Technology for 1,100 schools in Northern Ireland, 2024, gonurture.com/post/nurture-chosen-to-deliver-ai-powered-assessment-and-feedback-technology-for-1-100-schools-in-northern-ireland?utm [Accessed 21 May 2025]

231 The Higher Education Policy Institute, Student Generative AI Survey 2025, February 2025, www.hepi.ac.uk/2025/02/26/student-generative-ai-survey-2025/ [Accessed 21 May 2025]

232 AI Advisory Council Advice Paper, AI and Education, February 2025, enterprise.gov.ie/en/publications/publication-files/ai-advisory-council-ai-on-education-paper.pdf [Accessed 21 May 2025]

The council notes a range of views and perspectives on how far AI should be incorporated into education. It acknowledges that not everyone is comfortable with the pace with which it is being developed and used in education, but favour integrating AI into teaching and encouraging constructive use. It made the following recommendations on the use of Generative AI in the primary/post-primary/third-level and further education sectors:

- Government should create and publish coordinated and consistent guidelines for the use of generative AI when it is to be used, at appropriate education levels that harmonise with each other, while ensuring these guidelines remain "live documents" that can be quickly updated as AI technology evolves. These should cover both principles and use cases in order to ensure the safe, ethical and responsible use of AI.

- Government should lead the development and implementation of AI literacy training for educators across all educational levels which should focus on equipping teachers with fundamental AI knowledge, preparing them to further spread this knowledge. This should form a core part of professional development programmes for educators.

- Government should establish a system to ensure equitable access to generative AI tools in education, specifically addressing the monetary barriers and language support issues … making sure generative AI tools are private, secure, and free for all teachers and students.

- Government should facilitate a national conversation between teachers, parents/guardians, policymakers, technology companies, students, and educational technology innovators once the various AI guidelines are published, to create a more stable and directed approach to leveraging AI in education and monitor and evaluate the impact of the use of generative AI by students in education.

Across the rest of the UK, there is a similar situation where schools are beginning to use AI tools without it being formally part of the curriculum. According to a survey in England, 60% of teachers report using AI.[233]

Internationally, in some cases, AI is being integrated into the curriculum. For example, OpenAI is working with Estonia's government to provide all students and teachers in the secondary school system with access to ChatGPT Edu, a customised version of ChatGPT for educational institutions from September 2025 onwards.[234]

233 "AI in Education Survey: What UK and US Educators Think in 2025," *Twinkl*, accessed May 20, 2025, https://www.twinkl.ca/blog/ai-in-education-survey-what-uk-and-us-educators-think-in-2025.
234 "Estonia's Digital Leap: How Schools Are Embracing ChatGPT," *OpenAI*, accessed May 20, 2025, https://openai.com/index/estonia-schools-and-chatgpt/

Other countries looking at integrating AI across their education systems are China, India and UAE. Similarly, the California State University system (CSU) is integrating the same AI tool in higher education with provision to over 460,000 students and 63,000 staff.[235]

Teacher skilling

The Education Authority's (EA) Education Information Solutions (EdIS) Programme/C2K team are currently running two separate "Proof of Concept" research and trialling projects in relation to teacher use of the generative AI products: Microsoft Copilot for Microsoft 365 and Google Gemini, with approximately 200 teachers from 150 schools involved in these two projects and participating schools include nursery, primary, post-primary and special schools, as well as EA managed Education otherwise than at school (EOTAS) provisions. Ulster University has been engaged to undertake an independent evaluation of the "Proof of Concept" work.[236]

Sammy Taggart, Lecturer in Education at Ulster University, sets out the potential opportunity that flows from the standard C2K/EdIS network across the otherwise diverse education system in Northern Ireland. This has the potential to provide a common approach to Artificial Intelligence in education. Such an approach would help to minimise the scale of the digital divide.

GenAI in NI Schools – First-mover Advantages in a Goldilocks Zone?

Northern Ireland (NI) occupies a "Goldilocks zone" for educational technology adoption in schools: large enough to interest commercial partners yet compact and coherent enough to evaluate systemic impact. Taggart and Roulston (2024)[237] locate this Goldilocks-sweet-spot at the intersection of policy coherence, manageable scale and teacher competence. Uniquely, schooling across NI comprises one Department of Education, a single curriculum authority (CCEA), mainly local Initial Teacher Education (ITE) providers, a single inspectorate (ETI) and, crucially, the unified EdIS/C2k managed service. This service provides every learner, teacher and supporting

235 OpenAI. "OpenAI and the California State University System Bring AI to 500,000 Students and Faculty." OpenAI, February 4, 2025. https://openai.com/index/openai-and-the-csu-system/

236 AQW 24810/22-27 31 March 2025

237 Taggart, S. and Roulston, S. (2024) 'Educational technologies in schools in Northern Ireland: teachers' digital competences in the Goldilocks zone', *Journal of Digital Learning in Teacher Education*, 40(4), pp. 188–206.

colleague in every school access to a common broadband and software provision, device estate and single sign on cloud tenancy. In contrast, in England for example, Academy trusts and Local Authorities pursue divergent ICT contracts. Austin and Turner (2020)[238] show that NI's C2k contract gives every school a common technical baseline, while comparative policy analysis finds that in the Republic of Ireland ICT purchasing is still largely delegated to individual schools. There, most recent policy, albeit signalling well-considered strategic direction, affirms how "School leaders, guided by their Digital Learning teams, will continue to have autonomy and flexibility in how they invest this funding" (DoE [Ireland], 2022, p43).[239]

NI's common infrastructure advantage was demonstrated in the recent Generative AI pilot undertaken by Ulster University (Taggart & Roulston, 2025)[240], funded by Microsoft and alongside EdIS/C2k. Some headline metrics of the full report are summarised below.

Pilot metric	Result	Significance for scaleup
Teacher time saved	42,411 hours per year across 94 staff	Immediate workload gains may develop capacity for deeper pedagogical change.
Staff reporting reduced workload	85.3 %	High perceived value is a proven technological adoption driver.
Staff citing professional learning as key to use	95.7 %	Confirms that targeted development can unlock systemwide takeup.
Staff already seeing pupil attainment gains	41.2 %, with a further 38.2 % expecting gains	Indicates critical potential beyond efficiency.
Weekly AI use for SEN support	Up 12.6 %, with nearly one in ten using it daily	Demonstrates inclusive impact, aligning with policy on equity and inclusion.

238 Austin, R. and Turner, R. (2020) 'The role of blended learning for community cohesion: lessons from Northern Ireland', *Technology, Pedagogy and Education*, 29(3), pp. 361–376.

239 Department of Education (Ireland) (2022) *Digital Strategy for Schools to 2027.* Dublin: Government of Ireland.

240 Taggart, S. & Roulston, S. (2025) *Trailblazing_NI genAI_in_educAtIon: a_proof_of_concept_study_in_schools_in_Northern_Ireland_with_MS_Copilot.* Available at https://pure.ulster.ac.uk/ws/portalfiles/portal/219333343/Trailblazing_NI_V_PURE.pdf

The gains registered by the 94 participants can, with appropriate professional learning, extend to more schools at scale, at pace, uniformly. As contrasting examples, Republic of Ireland and England both report pockets of equally strong innovation and practice as demonstrated in this report, but their more patchwork architectures oblige each school, Trust or Local Authority to duplicate integration and compliance work; that heterogeneity may help explain why national rollouts can stall once the enthusiastic early adopters are satisfied (Towns, 2010; OEDC, 2023).[241, 242]

The Goldilocks analysis (Taggart & Roulston, 2024), however, contains a warning. While NI's infrastructure and governance may be "just right", the same study records a tail of low teacher digital confidence, with roughly one third of teachers describing themselves as "overwhelmed" by technology (Taggart and Roulston, 2024). Encouragingly, the 2025 pilot suggests that competence is malleable: almost every participating teacher credited well-timed and targeted professional learning with enabling their GenAI use. A system that can push software to every device overnight can, by the same logic, push high-quality professional learning, for example, micro-credential pathways grounded in pedagogy and mapped to the NI curriculum, to every staff calendar.

Policy implications flow directly from this analysis. First, a concise teacher digital competence framework for NI is needed to define what "good" looks like, from nursery to post-primary, and to evaluate progress consistently (Roulston, Taggart and McCaffrey-Lau, 2023)[243]. Second, crossnational-research shows that optional digital skills-related professional learning is embraced chiefly by teachers who are already confident with technology, so voluntary models widen the competence gap (OECD 2019)[244]. Professional learning, therefore, ought to move from optional workshop engagement to protected and mandatory teacher professional learning time. Third, policy makers should carefully consider and resource the use of NI's unique system-wide affordances in schools: a single update to EdIS/C2k filters, authentication and data protection agreements could enable enterprise-grade GenAI for any or every user in a single night, an efficiency that few jurisdictions can match.

241   Towns, M. H. (2010) 'Crossing the Chasm with Classroom Response Systems', *Journal of Chemical Education*, 87 (12), pp. 1317–1319. DOI: 10.1021/ed9000624. Available at: https://doi.org/10.1021/ed9000624

242   OECD (2023) OECD Digital Education Outlook 2023: *Towards an Effective Digital Education Ecosystem*. Paris: OECD Publishing. doi: 10.1787/c74f03deen

243   Roulston, S., Taggart, S. and McCaffrey-Lau, M. (2023) 'Ready for what? Digital readiness in teacher education', in Acquaro, D. and Bradbury, O.M. (eds) *International Perspectives on School-University Partnerships*. Cham: Springer, pp. 191–209.

244   OECD (2019) *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*. Paris: OECD Publishing.

In brief, the pilot demonstrates that Generative AI in NI schools can boost efficiency, inclusion and, early evidence suggests, teachers are confident it can benefit pupil attainment. NI's unified infrastructure and governance mean those benefits can be multiplied across every classroom faster than in more fragmented jurisdictions but only if teacher digital competence is lifted and supported in lockstep. With policy levers, technical architecture and commercial interest aligned, NI really is "just right" to lead with GenAI in schools.

Ongoing policy development within the Department of Education is timely for embedding policy and practice clarity regarding the use of AI in the classroom and developing AI literacy amongst students.

The Education Minister, Paul Givan, is delivering his far-reaching TransformEd NI teaching and learning strategy for educational excellence.[245] The Strategic Review of the Northern Ireland Curriculum, conducted by Lucy Crehan, is due to report in May 2025 and will heavily influence this work (Review of the Northern Ireland Curriculum | Department of Education). A new Curriculum Taskforce will be established within DE to take forward curriculum reform.[246]

Within the strategy, the minister has placed a strong emphasis on a knowledge-rich curriculum. In this emerging age of AI, foundational knowledge in terms of core subjects such as mathematics and how language is constructed will likely remain essential, and provide a solid platform for critical analysis and other crucial work skills. An appropriate balance should be found with relevant skills, including how AI can be safely used to access a much greater wealth of data and knowledge available.

In his speech to the Transform Ed conference, the minister emphasised that the knowledge-rich approach does not ditch skills, and instead supercharges them. He acknowledged that a strong core of knowledge across makes skills such as creativity and critical thinking stronger. He further acknowledged the potential of artificial intelligence to revolutionise education, including the reduction in the time spent on many administrative tasks.[247]

245 Department of Education, TransformED NI: Transforming teaching and learning: a strategy for Educational Excellence in Northern Ireland, www.education-ni.gov.uk/sites/default/files/2025-03/TransformED%20NI%20layout.pdf [Accessed 21 May 2025]

246 Department of Education, TransformED NI: Transforming teaching and learning: a strategy for Educational Excellence in Northern Ireland Delivery Plan, www.education-ni.gov.uk/sites/default/files/2025-05/TransformED%20NI%20Delivery%20Plan.pdf [Accessed 21 May 2025]

247 Department of Education, "Givan: Education is the foundation of everything we aspire to be" 8 May 2025 www.education-ni.gov.uk/sites/default/files/2025-05/TransformED%20speech.pdf [Accessed 21 May 2025]

Universities and Colleges

How to embrace AI within third level education in terms of the reality of increased use by students, ensuring students are equipped for the evolving nature of work, and protecting the integrity of assessment. These matters are subject to significant debate.

The Higher Education Policy Institute – Student Generative AI Survey – February 2005[248] explored the use of generative artificial intelligence tools by full-time undergraduate students. Almost all students (92%) report now using AI in some form, primarily for explaining concepts, summarising articles and suggesting research ideas. 18% of students state that they have directly included AI directly in their work. Reasons cited for the use of AI is time-saving and perceived improved quality of their work, whilst those not doing so cited the risk of being accused of academic misconduct and the fear of getting false or biased results. Women are more worried about these factors than men, and men report more enthusiasm for AI throughout the survey, as do wealthier students and those on STEM courses. This is an example of a widening digital divide.

80% of institutions report they have a good record on protecting the integrity of assessments, with 80% agreeing their institution has a clear AI policy and 76% saying their institution would spot the use of AI in assessed work.

By contrast, only 36% report receiving support from their institution to develop them. However, staff literacy has increased, with 42% of students suggesting staff are 'well-equipped' to help them with AI, compared with just 18% in 2024.

248 The Higher Education Policy Institute, Student Generative AI Survey 2025, February 2025, www.hepi.ac.uk/2025/02/26/student-generative-ai-survey-2025/ [Accessed 21 May 2025]

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

Inequality & Digital divide

Northern Ireland is already characterised by significant skills differentials, reflecting wider inequalities within society.

Looking ahead, differential engagement with AI could see further divergence in terms of economic and other prospect, plus missed opportunities to fully utilise potential talent.

AI has potential to destabilise and reinforce and repeat perceptions of winners and losers that were a feature of globalisation and earlier phases of technological change.

This reinforces need for government to provide generous reskilling and retraining funding and associated programmes, including an increased emphasis upon life-long learning, alongside engagement with workers and their representative organisations.

As referenced above, there is a strong case for a standardised approach within the education system.

This entails missed opportunity for individuals, and a collective loss of talent for the economy.

Standardised education can help to reduce risk of a divide through providing more equitable access and opportunity. Otherwise, access and opportunity would be driven by circumstances in the home.

At the same time, AI has the potential to have a more positive impact upon inclusivity in education, and to provide for engagement for those who have faced barriers.

However, the formal education system alone can't address digital divide. Need for other programmes aimed at adults, especially those marginalised from the workforce.

AI provision could be introduced in community-based education option and into potential programmes that could form part of a future strategy to address economic inactivity.

Moreover, the use of AI may help address some of the challenges faced by those falling into particular categories of economic inactivity.

Northern Ireland also has lowest disability employment rate in UK, notwithstanding a range of programmes and a previous strategy. A further intensification of information and communications technology in the workplace could open up greater opportunities in terms of for example greater provision of assistive technologies and remote work enablement.

Recommendations

- Detailed work should be undertaken to assess the evolving skills needs that will increasingly be required to directly enable AI innovation and application, alongside more general skills impacts across the economy. The forthcoming report from Matrix on AI and The Future of Work is acknowledged and welcomed in this respect.

- The conclusions of such assessments should be factored into skills and workforce policy assumptions, programmes and funding, with the need for both anticipatory and reactive interventions.

- The Digital Skills Action Plan should be refreshed to encompass AI aspects, or alternatively, AI skills needs should be addressed within a new action plan.

- The Executive should consider the integration of AI into all levels of the education system, reflecting on similar international case studies.

- Revised approaches to a number of policies and programmes may be required, including AI literacy and flexibility in apprenticeships, enhanced upskilling and reskilling opportunities, greater promotion of life-long learning, a revised approach to second primary degrees, AI considerations factored into careers advice, greater STEM (or STEAM) provision, and an enhanced focus at addressing gender imbalances within STEM.

- It should be acknowledged that school pupils, and college and university students will be using AI within their studies, and in turn in their future careers, and teaching and assessment methods need to be assessed and adjusted accordingly.

- AI considerations need to be fully integrated into the review of the curriculum in Northern Ireland, with an appropriate balance being struck between embedding necessary foundational knowledge and the provision of contemporary skills.

- The specific opportunity of providing a standardised approach to AI across the education system in Northern Ireland due to the current C2K and future EdIS (Education Information Solutions) networks should be recognised, particularly in light of the need to ensure equality of opportunity for students and minimise the digital divide.

- Universities and colleges should continue to develop specialised undergraduate and postgraduate courses in areas of emerging technological interests.

- Universities and colleges should seek to integrate AI across curricula, including embedding basic levels of AI literacy within all degree or other programmes, and developing stackable AI micro-credentials for academics, students, businesses and the public sector.

- The Executive should consider the potential role for AI in addressing high levels of economic inactivity and relatively low levels of disability employment in NI.

AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

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AI for NI: A Strategic Overview for the Adoption of Artificial Intelligence in Northern Ireland

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