



THE FUTURE IS COMING: READY OR NOT?

Delivering a successful 21st century
skills system for Northern Ireland
and Scotland

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SUMMARY

This report marks the third in a series of three reports looking at what a 21st century skills system should look like, in a comparative study across Northern Ireland and Scotland. Our previous work has considered the challenges we face, and the measures of success we should have for each skill system,¹ as seen by people working in and around the skills system in both Northern Ireland and Scotland. This report brings together previous work to make recommendations for what needs to change and what needs to stay the same in Northern Ireland and Scotland to get ready for the future we face.

Priorities for the skills systems in Northern Ireland and Scotland

Disruption will be significant over the coming years – the skills system needs to be ready

Automation, artificial intelligence, new advances in analytics and technological change will bring huge disruption to Northern Ireland and Scotland over the coming years. This new wave of automation – sometimes referred to as the fourth industrial revolution – will bring ‘thinking’ machines that will bring automation to sectors and skill levels not reached previously.

Almost half of jobs in Northern Ireland and Scotland (49 per cent and 46 per cent respectively) have a high potential of change through automation over the coming years. This does not mean these jobs will disappear, but it does mean they could change significantly, bringing huge new demand for upskilling and reskilling (Callander et al 2018). However, the vast majority of the workforce of 2040 have already left compulsory education – 57.7 per cent and 57.3 per cent of the workforce of 2040, in Northern Ireland and Scotland respectively, have already left compulsory education (ibid). A focus on young people alone will not be enough.

¹ We use the term ‘skills system’ to refer to all post-16 education, learning and training, whether in school, college, university or in the workplace through training and apprenticeships.

At the same time, we know that the population in Northern Ireland and Scotland will age quite dramatically. The number of pensioners for every 100 people of working age will increase from 26 per 100 to 35 per 100 in Northern Ireland, and increase from 29 per 100 to 36 per 100 in Scotland, between now and 2040. To protect living standards we will need to see significant increases in the working-age population or we will need to deliver significant increases in productivity from the remaining working-age population (ibid).

Alongside automation and ageing we are also likely to see further disruption from the changing nature of globalisation, climate change, and political uncertainty both within Northern Ireland and Scotland, within the UK and internationally. We are entering, if not already in, an age of disruption and we will need a skills system ready to help us respond.

Improving the quality of work will be key to the skills system

Currently, too many young people leave the skills system too soon, never to return, entering low-paid and insecure work that for too many become low-paid and insecure careers. In Northern Ireland we found that 18.7 per cent of 16–24-year-old workers are in insecure work, compared to 11.4 per cent of over-25s. In Scotland, 14.9 per cent of 16–24-year-old workers are in insecure work compared to 9 per cent of over-25s (see Table 1 below). At the same time we know few workers escape low-skilled work. Our previous work has shown that on average, only 2.5 per cent of workers in Northern Ireland, and only 6.2 per cent of workers in Scotland, progressed from low-skilled work per quarter between 2013 and 2018. This compares to a UK average of 6 per cent (Gunson et al 2018). For too many, low-paid work is a trap that leads to low-paid careers.

If the challenge following the recession of the 1990s was to get people back into work. The challenge we face now is in getting people into higher-quality work.

We will need a fully flexible lifelong-learning offer to increase participation among older workers, and increase employer engagement and investment

We will likely need to develop a new lifelong-learning offer with fully flexible provision – from intense bursts of learning to very part-time learning,

modular, and tailored specifically to learner choices and employer needs. This could place learners at the heart of new lifelong learning provision and enable employers of all sizes to engage with the skills system and workers, including the self-employed, to access in-work learning.

Curricula will need to be based on skills, attributes and a competency based approach

The aim of the skills system, including increased provision for mid-career workers, should be to develop skills, attributes and competencies. Given likely significant levels of disruption facing Northern Ireland and Scotland, we will need to create adaptive and resilient learners, and adaptive and resilient employers, through learning that goes beyond employees' existing roles, and employers' short-term needs.

The skills system will need to be an 'early adopter' of new technologies

We will need the skills system to become an early adopter of new technologies in how people learn, mixing online and face-to-face learning, increasing the impact from investment in skills, and keeping up with a world of work that will see far greater use of technologies.

The costs of transition will be large and should be shared between the public and employers

The transition from today to the Northern Ireland and Scotland we will need in the future will be expensive. We will need to see significant increases in provision for over-21s to reskill and upskill as automation, ageing and economic change bring significant disruption. We have estimated that the additional skills investment required to aid transition, and prepare for automation, will reach £100 million per year in Northern Ireland and £250 million per year in Scotland by 2025. The benefits of successfully managing the disruption we face could be significant. Therefore, the costs of transition should be shared.

We have set out clear recommendations for both Northern Ireland and Scotland, tailored for their current context, and the future they face. We believe the recommendations, taken together, could help to deliver a Northern Ireland and Scotland best-prepared for automation and ageing, and ready to take the significant opportunities on offer as technological and demographic change takes place.

Recommendations for Northern Ireland

Preparing Northern Ireland for disruption

1. An Automation and Ageing Taskforce to set a vision for how Northern Ireland needs to prepare for automation and ageing, and clear strategy and plans to do so.
2. A new ambition across Northern Ireland to see 100 per cent of under-21s engaged in the skills system by 2025. As part of this, Northern Ireland should replace the current school-leaving age of 16, with a new skills participation age of 18, with young people learning in the workplace or the classroom until the age of 18.
3. A new target to increase the number of over-21-year-old workers engaged in the skills system in Northern Ireland by 45,000 by 2025 to aid transition from the Northern Ireland of now to be ready for the future. These transition costs could reach £90 million of additional skills investment per year by 2025, bringing participation rates up to among the highest in Europe.
4. A Review of Lifelong Learning established to deliver a lifelong learning revolution.
5. Smart Information Advice and Guidance for learners and employers, under the banner of Progression NI, offering professional careers advice from the age of 11, with clear outcomes and measures, and independent brokerage for employers to help navigate the skills system.

The costs of this should be shared

6. A new £20 million per year Productivity Credit for small businesses in Northern Ireland, replacing the Small Business Rates Relief, to boost business investment in productivity-enhancing activity.
7. A new Progression Account, to provide a learner account worth up to £1,000 per year, carried forward for up to three years, for 10,000 lower-paid workers, investing up to £10 million in the skills system in Northern Ireland.

8. UK government protection of EU funding to Northern Ireland's skills system.

A coherent skills system

9. New cross-cutting 'missions' for Northern Ireland's skills system, bringing government, employers, learners and the skills system itself together, at the national and regional level, to tackle the key challenges and take the opportunities over the coming years.
10. New Regional Mission Groups to encourage collaboration across post-14 learning in Northern Ireland at the local level.
11. The introduction of outcome agreements across the skills system in Northern Ireland based on the principle of collaboration and an outcomes-based approach, and housed in one department (and in time under one minister).
12. Northern Ireland City Deal(s) that use capital spend and procurement to place skills investment at their heart.

Taken together these recommendations could deliver a Northern Ireland among the best prepared in the world for the future challenges and opportunities that automation, ageing and economic disruption will bring over the coming years. By reforming the skills system and delivering a lifelong learning revolution, the skills system can be at the centre of addressing the economic challenges ahead. The transition costs could be large in undertaking these reforms, reaching what could be at least £100 million of additional skills investment per year by 2025. These transition costs should be shared between public and private funding, or met by reprioritising existing spend.

Recommendations for Scotland

Preparing Scotland for disruption

1. New Committee on the Future Economy in Scotland (CoFE) based on the Singapore CoFE set up in 2016. The CoFE would be tasked with developing a clear vision, strategy and plans for readying Scotland for automation and ageing. This would include a new Automation Readiness Index and an Ageing Readiness Index for Scotland, a new Disruption Early Warning System, and new cross-cutting digital skills curriculum.
2. A national ambition to see 100 per cent of under-21s engaged in the skills system in Scotland by 2025. As part of this, Scotland should replace the current school-leaving age of 16, with a new skills participation age of 18, whereby young people need to be learning in the workplace or the classroom until the age of 18.
3. A new target to see an additional 100,000 over-21-year-old workers engaged in the skills system in Scotland by 2025, to aid transition and prepare Scotland for automation and ageing. These transition costs could reach £200 million of additional skills investment per year by 2025, bringing skills participation rates up to among the highest in Europe.
4. A new lifelong learning Technical Education (TE) route, based on the principle of 'nano learning' – full flexibility, modularised, mixed online and offline learning, fully tailored based on individual learner choices and employer need.
5. A new 'smart' Information Advice and Guidance service.
6. A new Displacement Training Service in Scotland to work with employees in companies and sectors deemed to be at risk of disruption from automation and ageing.

The costs of transition should be shared

7. An enhanced Individual Training Account, providing £1,000 per year, carried over for up to three years, for 30,000 workers each year, worth an additional £25 million per year.

8. A new £250 million per year Productivity Credit, replacing the Small Business Bonus to boost productivity-enhancing business investment in Scotland, including in skills provision.

A coherent skills system

9. The introduction of outcomes-based funding across the skills system, to introduce joint priorities across the skills system and allow funding to flow to the most impactful parts of the system. Outcomes would be based on the core principles of progression and productivity to deliver inclusive growth and prepare Scotland for the future.

These recommendations would ensure Scotland was among the most prepared countries in the world in getting ready to take the opportunities brought by automation, ageing and the economic change we face over the coming years.

By reforming the skills system and delivering a lifelong learning revolution, the skills system can be at the centre of addressing the economic challenges ahead. Our recommendations would see significant reform to the skills system in Scotland, aiding Scotland's ability to prepare for automation and ageing, and helping us transition from the economy of now to what we will need in the future. These transitions costs could be large, reaching up to £225 million per year by 2025, just in terms of additional skills investment alone. Transition costs should therefore be shared between public and private funding, or met by reprioritising existing spend.

Delivering a 21st century skills system may well be expensive but these costs can be met. Equally, the benefits of doing so could be great. Our recommendations would deliver a new in-work lifelong learning Technical Education route based on the 'nano-learning' principle, delivering 100,000 additional learners each year over the age of 21 by 2025, focused on those in lower-paid work. The recommendations would also deliver up to £250 million of funding for skills provision from employer investment through a new Productivity Credit, helping to share the additional skills investment required to get ready for automation and ageing.

1. INTRODUCTION

Northern Ireland and Scotland face significant disruption over the coming years. The economy and society will be reshaped by a number of fundamental shifts. Automation, technological change, artificial intelligence and advances in robotics, machine learning and analytics will alter the world of work. For up to half of workers, this will mean significant change to their roles as many tasks become automated. This workplace revolution, sometimes called the fourth industrial revolution, has already begun. In addition to this seismic change, the population will age significantly over the coming years. While the number of pensioners is set to increase significantly, the workingage population is already shrinking proportionally and will continue to do so.

Both Northern Ireland and Scotland enter this new age of disruption with significant strengths and weaknesses, but undoubtedly with existing economic underperformance in terms of inequalities, labour market exclusion, productivity rates, pay and career progression.

Addressing existing inequalities and underperformance offers not only a route to delivering a stronger and fairer Northern Ireland and Scotland today; beginning the work of building a more inclusive economy now will also best prepare Northern Ireland and Scotland for this new age of disruption.

A critical element of preparing for the disruption we will face over the coming years will be a skills system in Northern Ireland and in Scotland that plays its role in getting our workforce ready for change, and also one that is able to respond to changes as they take place. Throughout this report, we use the term skills system to describe all post-16 education, learning and training – including upper secondary school, college, in-work learning and university – but the focus of our interest has been on post-school and sub-degree provision as we believe this will be the part of the skills system best equipped to prepare the economy and society for the changes we will see over the coming years.

This report outlines that, despite a number of key strengths, the skills systems in Northern Ireland and Scotland are not yet ready to help respond to the changes we are facing now and over the coming years. It sets out a series of recommendations for what needs to change, and what needs to stay the same, tailored to the context in Northern Ireland and Scotland. These aim to ensure the skills systems can best contribute to seeing Northern Ireland and Scotland take the opportunities and meet the challenges that automation, ageing and wider economic change will bring.

Change brings with it the risk of new inequalities. However, we believe the recommendations within this report provide an opportunity to not only help to prevent new inequalities arising from disruption, but also to address existing economic weakness and inequalities.

The last 30 years has seen repeated moves to expand higher education (HE) provision to help the UK economy transition from an industrial past to the knowledge-led service economy of the present. The next 30 years will need to ally expansion of HE with an expansion in skills provision for over-21s in work, driving career progression, boosting productivity and helping to manage the effects of automation and ageing across the economy and society. We will need a skills system focused on helping to improve the quality of work, particularly for those in low pay and insecure employment. Such a system will enable us to manage the effects of automation to ensure we see fewer people locked out of the labour market due to technological change, we see low-rewarding tasks moved from human to machine, leaving higher-quality and more-rewarding work for our remaining working-age population.

To do this the skills system needs to better serve the people for whom it is designed.

It must better prepare young people for the workplace, equipping them with the skills, competencies and attributes they need to secure rewarding work that offers continuous learning opportunities and routes to rewarding careers and lives. Crucially, that means equipping all young people for work in the modern economy: currently, too many, particularly from the most deprived backgrounds, are failed by the system. This means reshaping how learners learn in Northern Ireland

and Scotland, and retaining young people within the skills system for longer.

It must support mid-career workers by helping them adapt throughout the whole length of their careers, as the jobs we do are reshaped by technology and tasks are redistributed. It must help people enter the labour market, and empower workers to gain the skills they need to progress in the workplace and secure higher wages by upskilling and reskilling throughout their careers. This means building a skills system that working people never leave.

It must design new provision for the oldest workers, to help ensure we capture and cascade the experience and knowledge of older workers to younger generations as they leave the workforce. This will help older workers to slow down rather than shut down their careers at retirement, and will ensure workplaces can make the most of the remaining, and proportionally smaller, working-age population as the population in Northern Ireland and Scotland ages.

The skills system should also better serve employers, responding to demand for skills and supporting employers both to invest in the skills of their workforce, and to make better use of the skills and competencies acquired by learners. Given the shape of the economies of Northern Ireland and Scotland and their future trends, we will need to find ways of making skills provision accessible to all sizes of employers – from micro-employers through to UK-wide employers navigating four different devolved skills systems. With the continued rise of the gig economy, it will be critical that we deliver a skills system that is open and accessible to selfemployed workers too.

And the skills system should better serve Northern Ireland and Scotland's economy and society overall: the skills system has an important role to play in tackling poverty and social exclusion, and driving up productivity and economic growth. Curricula too focused on the short term – that emphasise qualifications rather than skills and competencies – or with too narrow a focus on the immediate-term needs of learners or employers will not lead to the long-term benefits we need from precious public and private investment in skills. Equally, an incoherent system that demands needless competition rather than

collaboration will cost us, where already-limited resources may be squeezed further by the financial pressures brought on by an ageing population.

This report is the third of a series of three reports from IPPR Scotland looking at the skills system in Northern Ireland and Scotland. Our first report looked at Northern Ireland and the challenges facing the Northern Irish skills system. That work in turn built on previous IPPR Scotland work on the challenges facing the skills system in Scotland. Our second report explored what a successful skills system could do. It looked at what the prize of success would be, and what a successful skills system could do to contribute to society in Northern Ireland and Scotland. We looked at how a future-proofed skills system could better serve its beneficiaries: young people, mid-career workers, employers, and society overall.

This third and final report sets out how a successful skills system can be achieved. Here, we lay out a vision for a successful skills system that is capable of meeting the challenges and opportunities of the coming decades. We have developed the recommendations in this report following eight months of intensive research, consultation and collaboration with skills policy experts and practitioners across Northern Ireland and Scotland.

In both Northern Ireland and Scotland, there have been a number of policy developments in recent years that have put their respective skills systems firmly on the right track. We seek to build on these positive developments, and our proposals are intended to work with the grain of recent positive steps and government policy, rather than against them. In this spirit they are designed to fit with the existing government and delivery architecture.

Reform of the skills system is not the only way Northern Ireland and Scotland should prepare for automation and ageing. However, reform of the skills system could be one of the singularly most important ways that we can get ready for the future by preparing learners, workers, employers and the economy to take the opportunities, and meet the challenges, brought by the significant disruption we face.

If the imperative of the recession of the 1990s, and subsequent recovery, was to get people back into work, then the imperative today, in the context of a financial crash that has led to a decade of stagnant wages and productivity growth, must be to improve the quality of work. This challenge is particularly acute for young people and mid-career workers in low-paid and low-skilled work, who are the most likely to face the negative effects of automation-related disruption. Improving the quality of work will need a skills system that works with employers and learners to target improved productivity, works to deliver inclusive and sustainable growth that narrows rather than widens inequalities, and targets improved career progression and pay. In doing so we can also best prepare Northern Ireland and Scotland for the future, by improving the quality of work, future-proofing careers from the negative effects of disruption, and creating the learning routes that will support learners and employers to adapt to change.

2. THE CHALLENGES FACING THE SKILLS SYSTEM IN NORTHERN IRELAND AND SCOTLAND

Our first set of reports, *Equipping Scotland for the Future* and *Challenges Facing the Skills System in Northern Ireland*, looked at the challenges facing Scotland and Northern Ireland (respectively) from the perspective of the skills system (Gunson and Thomas 2017, Gunson et al 2018).

If we are to successfully tackle the challenges we face we will need to ensure the skills system in Northern Ireland and Scotland is clear as to the context it will be operating in. In this chapter, we summarise the challenges facing the skills system in both Northern Ireland and Scotland, as seen by those working in and around the skills systems themselves.

Overall challenges facing the Northern Ireland and Scotland skills systems

1. Automation – including technological change, artificial intelligence, advances in analytics and big data – will bring significant disruption to the economy and society over the coming years. This is sometimes referred to as the fourth industrial revolution.
2. The population in Northern Ireland and Scotland is set to age significantly, bringing disruption to the economy and society.
3. Political uncertainty, not least from Brexit, and the potential changing nature of globalisation may bring further disruption and increasing levels of international protectionism.

4. Existing economic inequalities need to be tackled to address current economic underperformance – low rates of productivity, pay and progression, and low rates of business investment and high levels of inactivity – we will need to deliver a more inclusive economy in the future.
5. The funding environment for skills investment (public and private) looks like being constrained for the foreseeable future.
6. Too many young people leave the skills system too soon, and with too few skills or qualifications.
7. A lack of provision for mid-career/lifelong learning and inflexible learning modes locks out large parts of the population from learning and training.
8. Incoherence across the skills system and an outputs approach means wasted resources on duplication and the opportunity cost of funding lower-impact skills provision.
9. Lack of demand for upskilling and reskilling from learners is holding back the potential of the population as a whole.
10. Low employer engagement (particularly SME/self-employed), and low use of learners' skills by employers is holding the economy back as a whole.

Source: Summarised from Gunson and Thomas 2017, Gunson et al 2018

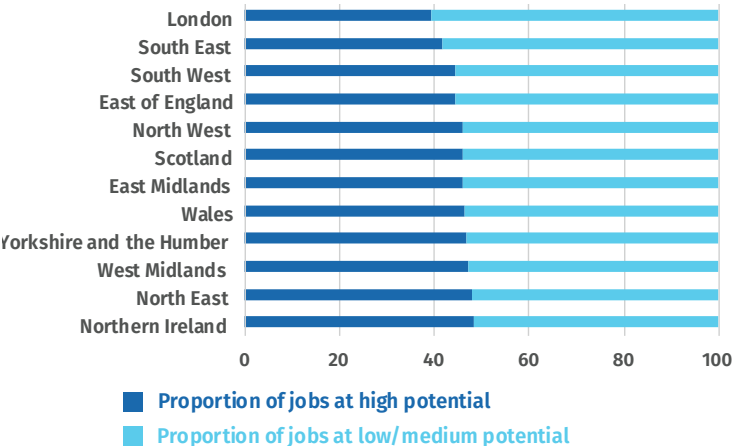
2.1 What are the challenges facing the skills system in Northern Ireland and Scotland?

Automation, technological change, advances in robotics and analytics and artificial intelligence are on track to significantly change the jobs we do and the structure of the economy in both Northern Ireland and Scotland. As shown in figure 2.1, 49 per cent of jobs in Northern Ireland, and 46 per cent of jobs in Scotland have a high potential for change through automation over the coming years (Gunson et al 2018). This will not mean that almost half of jobs will necessarily vanish, but it does mean that almost half of jobs have a high potential for change, as tasks are automated and job roles reshaped.

The level of disruption brought to both Northern Ireland and Scotland is therefore highly likely to be very significant.

Figure 2.1: Jobs in Northern Ireland have higher potential for automation

Proportion of jobs with the highest and lowest technical potential for automation by nation and region (probability >0.7)



Source: From Callander et al, *Preparing for automation and ageing: A successful 21st century skills system in Northern Ireland and Scotland* (Callander et al 2018)

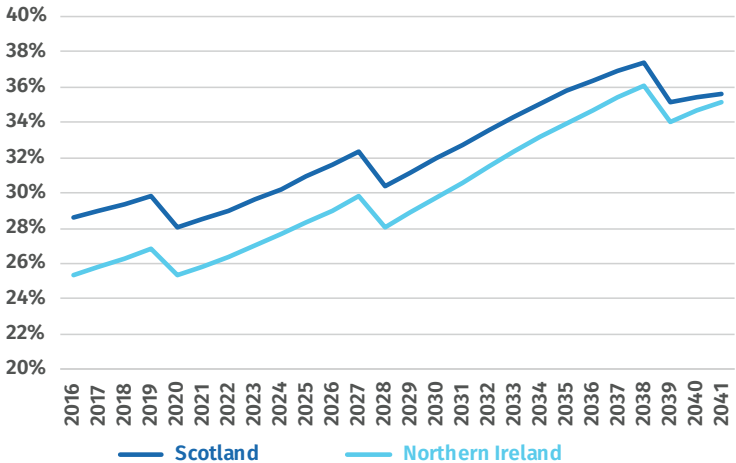
Where we see disruption and change, there is a need for the skills system to provide upskilling and reskilling opportunities, to aid transition through change. However, crucially, the transition we need in the face of automation is unlikely to be successful if we solely focus on young people and compulsory education. The vast majority of the future workforce has already left compulsory education – 79.8 per cent of the workforce of 2030 in Northern Ireland and 79.7 per cent in Scotland, with 57.7 per cent of the workforce of 2040 in Northern Ireland and 57.3 per cent in Scotland having done likewise (Gunson et al 2018). While changes to the school system, and provision accessed by younger people, will be required, the challenge we face will likely need a renewed focus on older workers too if we are to face disruption and change successfully.

Where disruption occurs there is also a clear risk of new inequalities arising. If managed incorrectly, automation could undermine the earning

power of large proportions of the workforce, while also excluding from the benefits of automation those from poorer backgrounds, those with less ability to work with or around digital technologies, and older workers. The skills system will be crucial in opening up the opportunities of automation to the whole of the population, and to the full range of the economy.

Demographic change will also have a significant impact on the requirement for skills. Figure 2.2 shows that the workforce is ageing, with the numbers of pensioners for every 100 people of working age increasing in Northern Ireland from 26 for every 100 now, to 35 per 100 by 2040. Likewise, in Scotland we see a projected increase from the current ratio of 29 pensioners for every 100 people of working age, to 36 for every 100 by 2040. This takes account of projected increases in the pension age across the UK to aged 68 by 2038 (Callander et al 2018).

Figure 2.2: Northern Ireland and Scotland are projected to age dramatically over the coming years
The ratio between the working-age and pensioner-age population in Northern Ireland and Scotland over time



Source: IPPR Scotland calculations using NISRA 2017, NRS 2017

Note: We have not included the phasing of the increase in the UK pension age in these calculations which will take place between Oct 2018–20 moving from 65 to 66, and is planned to take place between 2026–28 for the rise to 67 and 2037–39 for the scheduled rise to 68. Instead we assume an increase to 66 in 2020, 67 in 2028, and to 68 in 2039.

An ageing population is a huge success that may bring new benefits to society and the economy. But without question it will also bring significant financial challenges. An ageing population will bring increased costs through demand on public services such as health and care, and higher spend on entitlements. Equally, it may lead to greater pressure on other parts of the public sector as resources become more constrained. And an ageing population will also potentially reduce economic performance as the working-age population shrinks relative to the pensioner population. The skills system will be integral to finding ways to get more out of the existing working-age population, while also capitalising on the dividend of increasing numbers of older people.

Brexit and changing global trade patterns have already led to uncertainty in Northern Ireland and Scotland. The nature of globalisation may be changing as we see a greater trend towards protectionism and unilateralism. At the same time, the UK's vote to leave the EU has led to a great deal of uncertainty in relation to the economy in general, and immigration in particular. International uncertainty is a further disruptive effect which seems difficult to plan for now, and may continue into the future. We will need a skills system that is ready to adapt and respond, and one that equips learners and employers with the skills, competencies and information they need to navigate change.

Increasing levels of political **uncertainty** were also identified as key challenges by the skills system itself. In Northern Ireland the collapse of power-sharing and the devolved administration, has meant there has been little political direction in general, and specifically in relation to skills policy, for some time. In Scotland, Brexit, and the potential for constitutional change has been seen as a potential uncertainty for policy in Scotland too.

We also heard of the challenge of existing economic weaknesses in both Northern Ireland and Scotland. **Low pay, career progression and productivity rates** are serious problems in both Northern Ireland and Scotland, holding back too many people's potential. These are existing economic weaknesses that in many ways will be exacerbated by the future disruptions we face, those in low-pay careers, and those working

for low-productivity companies and sectors will see the greatest risk of the negative effects of disruption. Addressing these weaknesses now could help to prepare Northern Ireland and Scotland for the future, making them better insulated from the negative effects of the challenges we face, and better able to seize the opportunities that technological change and ageing may bring.

Twenty-six per cent of the workforce in Northern Ireland (some 211,000 workers) and 19 per cent of workers (some 404,000) in Scotland are paid under the real living wage (IHS Markit 2017). Career progression rates in Northern Ireland are far below the UK average. In Northern Ireland on average only 2.5 per cent of workers progressed from low-skilled work per quarter between 2013 and 2018, compared to a UK-wide average of 6 per cent. Over the same period, the average proportion of workers in Scotland moving from low-skilled work into mid or high-skill work was 6.2 per cent between 2013 and 2018. This compares with a career progression rate of 7.2 per cent in the East of England, which is the highest-performing region in the UK (on average, per quarter, between 2013 and 2018) (Gunson et al 2018).

Likewise, productivity levels, while much improved from 20 years ago, are still below the UK average, which itself is poor against many international competitors (Gunson et al 2018). In many ways, career progression and pay levels are the flipside to productivity, and boosting one can lead to progress in the other.

The long tail of low productivity

Since devolution in 1999, productivity levels in Scotland have moved from among the worst in the UK to now around the UK average. However, since the financial crash of 2007/08 – as with the UK as a whole – productivity levels in Scotland have flatlined. This leaves Scotland's productivity levels below many international competitors.

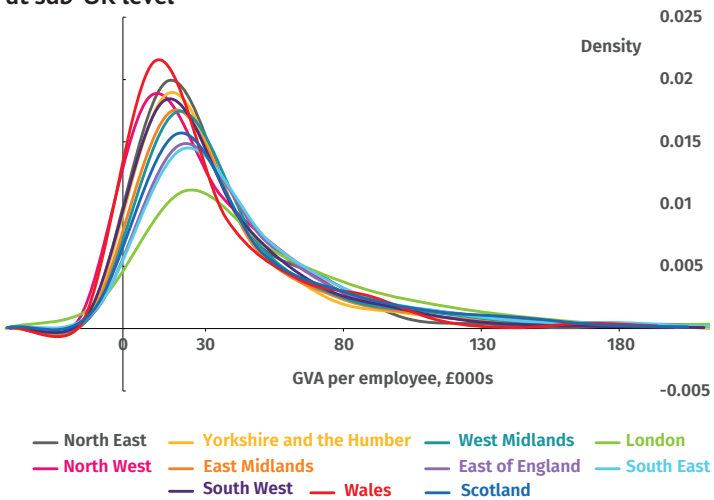
At the same time Scotland's economy, as across the UK, is characterised by a small number of high-productivity 'frontier' firms, and a long tail of low productivity firms (as figure 2.3 illustrates). However, outside of London, the South East and the East of England,

Scotland has a better distribution of productivity at firm level than the rest of the UK.

A long tail of low productivity shows the need for Scotland to focus efforts on boosting productivity across the 'everyday economy', including low-pay sectors, rather than solely focusing on the highest-productivity firms. This is likely to need a focus from economic development investment, but also from the skills system too, with in-work learning well placed to make a difference to this long-tail pattern of productivity.

Figure 2.3: Every nation or region at the sub-UK level (for which we have data) displays a long tail of low productivity firms

Distribution of firm-level productivity (GVA per head) at sub-UK level



Source: Haldane, 'Productivity puzzles', speech at the London School of Economics (Haldane 2017)

Neither the skills system in Northern Ireland nor in Scotland is sufficiently focused explicitly on delivering outcomes around boosting pay, progression and productivity. These objectives should be hardwired into how we judge success in the system, and indeed resources should flow to the parts of the skills system most able to make a difference on these measures.

Funding levels for skills provision have been dropping in recent years. As public spending cuts have been implemented following the financial crash of 2007/08, we have seen a significant period of public funding constraint. At the same time, across the UK employer investment in training has remained broadly flat (following a dip) recovering to £44.2 billion per year in 2017, from a low of £41.1 billion in 2013, compared to £43.8 billion per year in 2011 (in 2017 prices) (UK DoE 2018a).

Too many people leave the skills system with **low or poor qualifications**, particularly among those from the most deprived backgrounds. This leaves them adrift in the world of work, potentially trapped in low-pay and low-progression jobs. On the basic tests of literacy and numeracy, the skills system in both Northern Ireland and Scotland lets too many people down. In Scotland, 25 per cent of boys and 17 per cent of girls who live in the most deprived quintile do not achieve basic standards in literacy. In numeracy, 22 per cent of boys and 13 per cent of girls from the most deprived backgrounds do not meet basic standards (Scottish Government 2018b).

Similarly, in Northern Ireland, fewer than half (47.5 per cent) of young people entitled to free school meals achieved five A*–C grades including English and Maths in 2016/17. This compares to an achievement rate of over three in four (77.4 per cent) of their peers who are not entitled to free school meals (DEd 2018).

The skills systems in both Northern Ireland and Scotland are not well focused on **mid-career learners**. In Scotland in particular we have seen a reduction in the flexibility of learning provision, and a focus on young people (Gunson and Thomas 2017). While less pronounced in Northern Ireland, there is still a lack of provision aimed at mid-career workers (Gunson et al 2018). As outlined above, given the level of disruption workers are likely to face over the coming years, we will need to provide far greater opportunities for workers and employers (of all sizes) to access in-work learning for older workers.

Incoherence across the skills systems as a whole is leading to opportunity costs in lost impact from skills investment, and wasted resources on needless duplication. Often, particularly in Northern

Ireland, the idea of the existence of a system was questioned in relation to skills, and in Scotland while greater efforts have been made to foster collaboration across skills provision, the challenge is to see a more coherent system, more coherent system-wide investment, and more coherent system-wide aims and outcomes (Gunson et al 2018). At a time when public and private funding is constrained, and is likely to continue to be so into the future, we will need to move to a skills system where funding is invested in the areas most likely to deliver the impacts we wish to see. We need to move to an outcomes-based approach across the skills system, and move away from input and output funding, often based on outdated historical patterns of spending.

Supply and demand for skills is not well matched. Too many workers have their skills underutilised, too many employers struggle to recruit the skills they need. In Northern Ireland and Scotland significant proportions of employers report that they are not using the skills and qualifications of significant proportions of their staff well (Gunson et al 2018). Thirty-seven per cent of employers in Northern Ireland and 35 per cent of employers in Scotland report that they are not fully utilising the skills and qualifications of their staff. At the same time, 9.4 per cent of staff in Northern Ireland and 9.2 per cent in Scotland have skills and qualifications that are not being fully used (compared to 8.7 per cent across the UK). This is despite increasing levels of skills shortages across Northern Ireland, Scotland and the UK as a whole (UK DoE 2018b, UK DoE 2018c).

The impact of this can be seen in Northern Ireland, which has been characterised as a low-skills, low-pay equilibrium, hampering overall economic performance (Mac Flynn 2017). In this equilibrium, low levels of skills in the population appear to be matched by, and linked to, low demand for skills from firms in Northern Ireland. Poor utilisation of skills, or few jobs requiring skills in the job market, means that workers see little benefit in increasing their skill set. We need to see increases in demand and supply for skills, and better matching between the two, to give individuals opportunities and drive economic growth.

3. WHAT WOULD A SUCCESSFUL SKILLS SYSTEM LOOK LIKE?

Our second report, *A successful skills system in Northern Ireland and Scotland*, outlines what success would be for the skills system over the next decades of the twenty-first century, as seen by those in and around the skills systems in Northern Ireland and Scotland.

As outlined, over the coming decades, the economy will undergo significant disruption, likely to be beyond the scale of the deindustrialisation of the 1970s and 1980s, reaching most parts of the economy, sectors and skill levels. At the same time, demographic change will see Northern Ireland's and Scotland's population age over the coming decades, with working-age adults decreasing as a proportion of the population, in relative terms, and significant increases in the older population. With current economic inequalities holding the national economy back, and with high levels of international political uncertainty from Brexit, and from domestic political uncertainty within Northern Ireland and Scotland, the challenges facing Northern Ireland and Scotland are significant.

In light of these challenges, we looked at what the measures of success should be for a 21st century skills system. This chapter sets out the measures of success for a 21st century skills system as seen by those working in and around the skills systems in Northern Ireland and Scotland.

What is success for a 21st century skills system?

1. to maximise and realise the potential of all of the people of Northern Ireland and Scotland
2. greater numbers of people engaged in meaningful learning throughout their lives
3. to help people and the economy to best prepare and respond to automation through a system focused on developing resilience, skills and competencies among learners
4. to help people and the economy to best prepare and respond to ageing, working with learners and employers to get the most out of the remaining working-age population
5. greater numbers of employers investing and engaging in the skills system
6. a proactive and responsive skills system able to reflect employer's and learner's needs at the local, regional and national level, in curricula content, delivery and strategy
7. to contribute to inclusive economic growth that narrows social inequalities
8. a skills system focused on driving increases in progression, pay and productivity rates
9. a more flexible skills system with learning routes from intense bursts of learning to long-term, low-intensity learning
10. a coherent skills system, with reduced duplication, based on collaboration not (unhelpful) competition.

3.1 What would success look like for a 21st century skills system?

A successful skills system would do **better to maximise and realise the potential of younger learners.**

We need to be more ambitious for our young people. They should be equipped with the skills they need to secure rewarding work and

rewarding careers, avoiding low-paying, insecure work without options for learning and training. We have seen success in both Northern Ireland and Scotland in preventing and reducing youth unemployment. However, the success of securing just any job on leaving the skills system is not sufficiently ambitious for our young people or for our economy, particularly in the context of automation, technological change and population ageing.

However, there is a need to build on the success of reducing youth unemployment by increasing the quality of work for young people, to improve the quality of their careers. We need to see all young people securing jobs with prospects that provide training to continue their development in their early careers, minimising the numbers of young people in low-paid, insecure work, without wrap-around learning and training investment.

A successful system would also reduce and minimise the proportion of young people who exit the skills system with **no, or low, qualifications** and skills.

A successful skills system would retain greater numbers of young people within the skills system – whether in the workplace or the classroom – for longer. It would set key outcomes to measure the success of the skills system that aim higher than just any job, instead focusing on delivering young people from the skills system to high-quality work with prospects.

A successful skills system, ready for the twenty-first century challenges we face, would focus not only on those entering the world of work but would provide far greater training and learning opportunities **to maximise and realise the potential of mid-career workers**. A skills system that delivers genuine lifelong learning will be central to our future success, so the skills system must be structured to engage with individuals at all stages throughout their working lives. Given the levels of disruption we will face in the future, we will need to offer far greater opportunities for workers to upskill and reskill throughout their careers.

Crucially, provision for older workers should be focused on the key outcome of delivering higher-quality work through increased pay

and career progression for learners, and particularly those in low pay, and higher productivity for employers and the economy as a whole, particularly the 'everyday economy'. This would help to drive economic growth that also narrows social and economic inequalities.

To that end, a successful skills system would be more adept at implementing **new responsive and modular curricula**, based on competencies and attributes, rather than solely knowledge, to deliver adaptive and resilient learners. Curricula could be shared across parts of the skills system, with a common focus on improving digital skills across age groups.

Part of this will also require new **proactive skills programmes** aimed at providing 'progression ladders' up to new careers for people at risk of being displaced out of the labour market, ensuring their skill levels are protected through disruption. We need to track and recognise prior learning across all component parts of the skills system and throughout careers, offering proactive career-long advice and guidance.

A successful system would therefore see increased participation rates from employees of all ages and at all stages of their career, right up to retirement, with flexible learning options from the most intense to the most part-time. This should be focused on improving career progression rates, particularly prioritising moving those in low-paid work into higher-paying jobs.

We need to **develop a new partnership between employers and the state** that encourages 'enlightened self-interest' on the part of employers. This would see new ways for employers to shape learning in the classroom (alongside new routes for learners to do likewise), and ensure learning is useful for, and used by, employers and learners alike. At the same time, public funding for skills would become contingent on outcomes delivered by employers. For example, a successful skills system may need to make more of public investment contingent on evidence of career progression from employers for learners who successfully complete. Likewise, a successful skills system will be one that finds new ways to increase employer investment in skills, developing provision closely aligned to employer and learner need, and accessible to all sizes of employer.

A successful system would increase participation rates from **self-employed and gig economy workers** and those in insecure employment, and see greater progress in delivering more equal access and outcomes for learners in the skills system from all backgrounds and groups. We know that those in insecure work are far less likely to receive skills investment than secure employees (OECD 2014). However, equally, many workers in insecure work do not formally have an employer. As we have stated above, employer engagement and involvement will be important for the future. But if insecure work is likely to become an increasing feature of the labour market, due to new platforms and technologies, we need to ensure that the skills systems in Northern Ireland and Scotland are able to provide the training and learning that those in insecure work need.

Throughout our research, we heard key stakeholders question whether sometimes there was a **skills 'system'** at all (Callander et al 2018). We need to see the development of a skills system in Northern Ireland and Scotland, based on collaboration not needless competition, and based on delivering outcomes for learners and employers, not based on administrative barriers within the skills system itself. Needless duplication of learning – between colleges and universities, and between schools and colleges – must be eradicated so that learners and employers can avoid wasted time repeating levels of learning, public and private investment is not wasted, and the economy as a whole can gain the benefits of skills investment. That must involve coordinating action, encouraging collaboration over competition, and reducing needless duplication between different component parts of the system.

A successful skills system would be one focused on contributing to addressing the key economic and social weaknesses in Northern Ireland and Scotland, and focused on the economic opportunities brought by the significant disruption we face through automation, ageing and economic change. This will require a move to clear outcomes and ambitions across the skills system as a whole, shared jointly by all parts of the system.

Technological change also offers opportunities for **new and improved methods of teaching** and learning provision. New pedagogies

incorporate technology in new and innovative ways, maximising the impact from face-to-face learning (through, for instance, 'flipped classrooms') allowing for more adaptive curricula, learning better tailored to requirements, and greater flexibility to fit in with working lives. The skills system faces a significant challenge in continually reforming to make the most of the opportunities this brings, while still ensuring the system is dependable and navigable for learners and employers.

A successful skills system would reform how it provides information, advice and guidance (IAG) for learners and open up IAG to employers to help them to navigate the skills system; this would increase demand for skills provision, and it would increase how well employers use the skills of their workforce. This would see new, 'smarter', forms of IAG that can track individual modules, qualifications, attributes, skills and competencies developed by learners throughout their careers, and enable the matching of learners to employer demand. The division between what has traditionally been seen as enterprise or economic development and the skills system will need to blur.

A successful skills system would be one where resources are far more fairly focused on people from all backgrounds, rather than the current situation where the overwhelming majority of public and private resources in skills are focused on those from less deprived backgrounds. We need to see **fair access** to education and fair access to skills investment. Those from more deprived backgrounds are most likely to leave school earlier, and not continue their education into higher levels of learning. We know that in-work learning and further education, receive less resources per-head than higher education. And in the workplace we know that employers are more likely to invest in workers that already have high levels of skills than those that are low-skilled (Callander et al 2018). This needs to change if we are to end the inequalities holding our economy back, and get the most out of the whole of the population, particularly in the face of disruption from automation and ageing.

4. A VISION FOR THE SKILLS SYSTEM IN NORTHERN IRELAND AND SCOTLAND?

Given our findings around the challenges facing the skills systems in Northern Ireland and Scotland, and the measures of success we will need, we can see a developing vision for a 21st century skills system.

Disruption and change will be constant and as such the skills system will be quick to respond and adapt what it provides and how. It will prepare the learners and employers it works with to navigate a future with an increasing pace of change. This will need employers and learners at the heart of the system, shaping learning content and structure, creating an agile skills system.

The key outcome for the skills system will be improving the quality of work. If the recovery following the 1990s recession was about getting people back into work, the recovery we are in now should be about getting people into higher-quality jobs, particularly given the last decade of stagnating wages and flat productivity growth across the UK (Kibasi et al 2018). As automation, technological change and ageing take hold over the coming years, higher-quality work will become a greater imperative, as we aim to reduce the risks of automation for people and get more out of a declining working-age population. Higher-quality work will mean different things for those within the skills system. For younger people it will mean a skills system that retains younger people for longer (minimising the number of young people stuck in poor-quality jobs without opportunities for training and learning). For older people, delivering high-quality work will mean a skills system focused on driving career progression. And for employers, delivering higher-quality work for employees, will mean a focus on improving productivity.

Table 4.1 shows the proportion of young people in insecure work in Northern Ireland, Scotland and the UK, alongside the equivalent figures for older workers. It shows that almost a fifth of young workers are in insecure work across the UK. In Northern Ireland, 18.7 per cent of young workers are in insecure work compared to 11.4 per cent of 25–65-year-olds. There is a similar trend in Scotland where 14.9 per cent of 16–24-year-olds are in insecure work compared to 9 per cent of 25–65-year-olds.

Table 4.1: Almost a fifth of young workers are in insecure work in Northern Ireland and across the UK

Number of 16–24-year-olds and 25–65-year-olds in temporary, zero-hours or self-employment in Northern Ireland, Scotland and across the UK

	Northern Ireland		Scotland		UK	
	Number	% of young workers	Number	% of young workers	Number	% of young workers
16–24-year-olds	18,000	18.7%	49,000	14.9%	677,000	17.6%
25–65-year-olds	84,000	11.4%	207,000	9.0%	2,811,000	9.9%

Source: Analysis is based on the Labour Force Survey (various most recent quarters) and the Family Resources Survey (2016–17), (ONS 2018a, ONS 2018b)

Note: We define insecure work as the respondent being in employment in their main job, excluding fixed-term contracts; having a zero-hours contract; being in self-employment that pays an hourly rate equivalent to lower than the national living wage, following the work of the TUC and others. Where estimates are made, we have tended to be conservative. Adjustments

We will see **significant increases in the skills participation rate for over-25s**, with new in-work learning routes offering reskilling and upskilling throughout people’s lives.

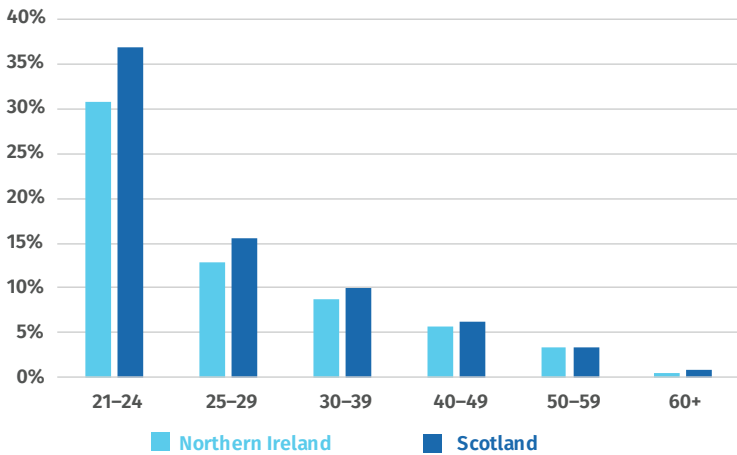
There are a number of international competitors who have invested in increasing skills provision for adult learners. In 2016, Denmark (31.9 per cent), Finland (32.4 per cent), Norway (26.5 per cent) and Sweden (28.6 per cent) all had significantly higher participation rates for 25–34-year-olds within formal education and training than the UK as a whole (17.4 per cent). Furthermore, while rates have increased between 2007 and 2016 in all four of the Nordic countries, rates have dropped in the UK for this age group (Eurostat 2018). Equally, investment in adult

education in Singapore has been a significant priority in recent years, with large expansion in adult skills participation rates, rising to over 20 per cent for both 20–29-year-olds, and 30–39-year-olds (DSS 2018).

Currently, as figure 4.1 shows, the skills systems in both Northern Ireland and Scotland are focused on young people, with low skills participation rates for the over-25s age groups. In Northern Ireland 31 per cent of 21–24-year-olds, and 37 per cent in Scotland, are in college, university or an apprenticeship. For 25–29-year-olds, 13 per cent in Northern Ireland and 15 per cent in Scotland are engaged in the skills system. Less than 10 per cent of 30–59-year-olds, in both Northern Ireland and Scotland, are engaged in the formal skills system.

Figure 4.1: Participation within the formal skills system drops with age group

The skills participation rate in formal education, training and learning in Northern Ireland and Scotland by age



Source: IPPR Scotland request to the Scottish Funding Council and Northern Ireland Department for the Economy

Skills provision will be **fully flexible**, from intense bursts of immersive learning to low-intensity part-time. It will also see a modular approach and a focus on bite-sized learning, with the possibility of learners and employers fully tailoring learning to their needs, module by module. Learning will therefore be more accessible to self-employed and SME workers.

What people learn will be more skills, competency and attribute based rather than purely focused on short-term knowledge or technical-based learning. The aim of curricula would be to develop resilient and adaptive learners and employers, futureproofing learning in what will be a period of an increasing pace of change. Employers and learners will need to be brought closer to how provision in the classroom is developed and the content of learning in order to boost the numbers of employers using or utilising the skills their workers have. This will see a skills system that trains workers not just for the role they currently have, but also one that works with learners to develop the skills and attributes they will need throughout their careers.

How people learn will need to see the adoption of new technologies, and mix online and face-to-face provision. The skills system will be early adopters of new technologies in learning and use face-to-face learning where most appropriate.

The transition to a world with greater levels of automation and an older population will be expensive – **we will need to share the costs of delivering a 21st century skills system between employers and the state**, focusing funding on the most impactful provision, reducing duplication and increasing coherence across the system.

5. RECOMMENDATIONS FOR A 21ST CENTURY SKILLS SYSTEM FOR NORTHERN IRELAND

There are many strengths within the Northern Ireland skills system that should be built on. Northern Ireland has a strong college sector, contributing across Northern Ireland's skills and economic needs, in a way not always seen in other parts of the UK. Equally, the system has retained a level of flexibility not always seen elsewhere. However, there is a long way to go before the skills system will be ready to prepare Northern Ireland for the future it faces. Tackling longstanding inequalities and weaknesses within Northern Ireland are important for reasons of social justice, but in the future the imperative will become stronger, as the inequalities and weaknesses holding Northern Ireland back now – including low levels of productivity, business investment, career progression and high levels of economic inactivity – will hinder the economy to a greater extent in the context of automation and ageing. Equally, the skills system is not a coherent system, and does not display strong levels of collaboration – between schools and post-school learning, and within the post-school parts of the system. Again, this is something Northern Ireland can ill afford now, but it will become even less affordable as we enter a period of increasing change and greater disruption.

This chapter outlines the key recommendations that will develop a 21st century skills system for Northern Ireland. Given the current breakdown of the powersharing agreement, many of these recommendations have been developed in a way that would be possible to deliver without political decision-makers. In many ways, Northern Ireland need not wait for the politicians to return to begin the work of future-proofing

its skills system. However, where political decisions are required, we hope relevant recommendations can be considered on the return of a functioning devolved administration to Northern Ireland.

Northern Ireland has a great number of strengths. By preparing well for automation and ageing, by bringing the skills system together, and by expanding upskilling and reskilling provision, Northern Ireland can get ahead of the rest in preparing for future challenges, and become a world leader in taking the opportunities on offer from automation, technological change and ageing. The skills system will be central to this and our recommendations are designed to build on existing Northern Ireland policy direction to deliver the change required.

Summary of recommendations

Our recommendations would build on existing policy and strategy to deliver the following.

- A Northern Ireland best prepared for automation and technological change, and an older population, through an Automation and Ageing Taskforce, and able to respond to huge changes automation and ageing will bring, including through a new Displacement and Retraining Strategy.
- A Northern Ireland where every young person is engaged in learning or training until the age of 21 by 2025, whether through earning and learning or in the classroom, setting every young person up for a career with prospects.
- A new target to increase the number of over-21-year-old workers engaged in the skills system in Northern Ireland by 45,000 per year by 2025 to aid transition from the Northern Ireland of now to be ready for the future. These transition costs could reach £90 million of additional skills investment per year by 2025, bringing skills participation rates up to among the highest in Europe.
- A Review of Lifelong Learning established to deliver a lifelong learning revolution in Northern Ireland.

- Smart Information Advice and Guidance for learners and employers, under the banner of Progression NI, to drive career progression through proactive careers advice for learners and independent brokerage for employers to help navigate the skills system.
- A new £20 million per year Productivity Credit for small businesses in Northern Ireland, replacing the Small Business Rates Relief, to boost business investment in productivity-enhancing activity.
- A new Progression Account, to provide a learner account worth up to £1,000 per year, carried forward over three years, for 10,000 lower-paid workers, investing up to £10 million in the skills system in Northern Ireland.
- UK government protection of EU funding to Northern Ireland's skills system.
- New cross-cutting 'missions' for Northern Ireland's skills system, bringing government, employers, learners and the skills system itself together, at the national level, and through Regional Mission Groups, to tackle the key challenges and take the opportunities facing Northern Ireland over the coming years.
- The introduction of outcome agreements across the skills system in Northern Ireland based on the principle of collaboration and an outcomes-based approach.
- Northern Ireland City Deal(s) that place skills provision, career progression and productivity at their heart, addressing economic challenges of now and preparing for the changes of the future.

5.1 Preparing Northern Ireland for automation and ageing

1. A new short-life Automation and Ageing Taskforce for Northern Ireland

A new independent, short-life, Automation and Ageing Taskforce should be established in Northern Ireland. Based in part on the Singapore

Committee on the Future Economy (CoFE) (CoFE 2017), this would bring together independent members from across Northern Ireland and beyond, independent of government, to outline a vision for how Northern Ireland can best prepare to take the opportunities of automation and ageing, and respond to minimise the potential challenges they may bring, clear aims and targets for preparing for automation and ageing, and to develop a clear strategy for meeting those aims and targets. In Singapore the CoFE was set up in 2016 and reported in 2018, with a Future Economy Council established to oversee implementation.

Automation and ageing will bring huge change to Northern Ireland over the next 15 years. Up to 49 per cent of jobs within Northern Ireland are at high potential of automation, bringing significant change to the world of work in Northern Ireland (Callander et al 2018). The current ratio of pensioners to workers will move from 26 per 100 to 35 per 100 workers by 2040, bringing further change and challenges (ibid). The level of disruption will require a similar level of response and as such, independent advice, scrutiny and strategy will be required to help government, business and workers across Northern Ireland get ready and respond to automation and ageing.

5.2 Preparing learners and workers for automation and ageing

2. A new ambition should be set to retain 100 per cent of under-21s in the skills system in Northern Ireland by 2025 – whether earning and learning, or in school, college or university. A key element of this would be introducing a new compulsory skills participation age of 18 in Northern Ireland, creating a legal duty for under-18s to be undertaking an apprenticeship or traineeship or otherwise in school, college or university.

The Northern Ireland Executive should set a clear national ambition to retain 100 per cent of under-21s within the skills system – whether earning and learning, or in the classroom. As part of this, the Northern Ireland Executive should legislate, once power sharing has returned, to increase the compulsory skills participation age to 18 years old, up from the current 16-year school leaving age.

Northern Ireland's school-leaving age is 16 years old. While this is in line with Wales and Scotland, since 2015 the participation age in England has been 18. Across Europe, a number of countries have a participation age of 18 including Belgium, Germany and the Netherlands.

Northern Ireland's declining working-age population, relative to the older population, means Northern Ireland must get the most out of the potential of the whole of the population. At the moment too many young people are being let down. Too many under-18s currently leave school without entering employment, education or training (known as NEET); while for many, employment that may seem like a success on paper may be no such thing. Equally, too many under-21s leave the skills system never to return. Given automation is likely to lead to significant disruption to future careers, with a greater requirement to reskill and retrain throughout people's lives, retaining greater numbers of young people within the skills system for longer will be important.

This proposal would help to increase skills levels and instil a habit of learning among young people that we hope would be continued throughout their lives. It would also help to maximise and realise the potential of all young people. Finally, it would help to redress existing inequalities in how we invest our skills funding, with those that enter university seeing far greater investment, for far longer, than those that go through other learning routes (or none at all).

For this recommendation to be successful, we will need to see learners retained by the most impactful part of the skills system for them as individuals – rather than, for example, pupils staying in school through to 18 regardless of whether that would be in their best interests. We would also need to see reductions in the number of young people in insecure low-paid work in Northern Ireland.

Much of the cost of this recommendation could be funded through reprioritising existing funding sources for post-14 education towards this aim, reducing duplication and moving to an outcomes-based funding. Equally, the population of 16–20-year-olds will drop between now and the mid-2020s, meaning existing funding levels could deliver a higher participation rate (NISRA 2017). A move to outcome funding for 14–19-year-olds may therefore be particularly important, whereby

public investment in skills (whether through schools, college or private training provider) is delivered to the parts of the system that deliver the greatest impact, reducing waste and duplication.

3. Northern Ireland should set targets to increase participation in lifelong learning provision up to among the highest rates in Europe by 2025 – seeing 40 per cent of 21–24-year-olds, and 20 per cent of 25–39-year-olds learning in Northern Ireland.

The Northern Ireland Executive should move to bring participation in lifelong learning up to among the highest rates in Europe. Denmark, Finland, Norway and Sweden see some of the highest rates of participation rates for 25–34-year-olds in Europe, with between one-quarter and one-third in formal education or training (Eurostat 2018). Singapore has moved to increase the numbers of its people training each year, now reaching a participation rate of over 20 per cent for 20–40-year-olds (DSS 2018). As we outlined in chapter 4, in Northern Ireland the current participation rate for 25–39-year-olds is 10 per cent.

Given that almost 60 per cent of the workforce of 2040 has already left compulsory education, and given automation will bring significant change to up to half of existing jobs in Northern Ireland, it is clear that concentrating on learning provision for young people will not be sufficient to prepare for automation. Furthermore, with existing economic weaknesses around productivity and economic inactivity, and an ageing population, we will need to get the most out of the existing workforce and the remaining working-age population.

Northern Ireland should now move to at least reach 40 per cent participation rates for 21–24-year-olds and a 20 per cent participation rate for 25–39-year-olds by 2025, putting Northern Ireland only behind the Nordic countries. This would see an additional 45,000 learners over the age of 21 each year by 2025.

Assuming an equivalent of 22,250 full-time equivalent (FTE) this would require additional investment, whether from public or private sources or reprioritisation of existing funds, of at least £90 million per year by 2025.² We believe this is a necessary cost of transition as we enter the

² We have based our costings on the current spend per FTE in Scotland which is £3919.83 (SFC 2018). Assuming a figure of 22,500 FTE at a cost of £4,000 per FTE this would amount to £90 million per year.

age of disruption, through automation, ageing and economic change.

4. A Review of Lifelong Learning to deliver a revolution in lifelong learning in Northern Ireland.

The Northern Ireland Executive should work with the skills system, learners and employers to undertake a review of existing lifelong learning provision and future needs for in-work learning for over-21s. Existing economic challenges around productivity and career progression require a focus on in-work provision for mid-career learners. Likewise, preparing for and responding to disruption caused by automation will also require a focus on provision for the existing workforce. A Review of Lifelong Learning in Northern Ireland would outline what is needed for in-work provision for older workers, consider existing provision, and outline what changes are required in the future.

The Northern Ireland Executive has a number of policy strategies within the area of skills that are close to requiring renewal, reform or replacement. Indeed, the Northern Ireland Executive is currently conducting a 14–19 education review, higher education review and skills review. In general, there is a risk that a large number of separate strategies could impede a coherent approach across the skills system. More specifically, there is a risk that training and learning provision for older workers is not given the priority it requires. A separate review of lifelong learning in Northern Ireland is therefore required.

The review should have a remit to consider:

- how to boost the skills participation rate for 21–24-year-olds to 40 per cent by 2025 (from recommendation 3)
- how to boost the skills participation rate for 25–39-year-olds to 20 per cent by 2025 (from recommendation 3)
- how to capture the experience and skills of the oldest workers as they reach retirement and new routes to cascading this to younger generations
- what new learning routes (if any) may be required, and how existing routes, such as apprenticeships and FE, could contribute to delivering upskilling and reskilling and boosting the over-21 skills participation rate

- the curriculum requirements – in terms of what is delivered and how - for over-21s in the context of automation, ageing and economic change.

5. Northern Ireland should introduce 'Progression NI' – a new 'smart' Information, Advice and Guidance (IAG) and brokerage offer for learners and employers.

Northern Ireland now has a unique individual learner number. In Scotland, the Scottish Government has recently proposed a new online learner account for learners, recommended as part of its recent Learner Journey Review (Scottish Government 2018b). It is planned to be implemented by 2019, allowing learners to track their attributes, skills and qualifications, and link them to learner choices and course applications. This stands to be an important innovation which Northern Ireland should consider closely.

The Northern Ireland Executive, however, has the opportunity to go further by establishing a new smart Information Advice and Guidance (IAG) offer for employers and learners under the banner of Progression NI.

For learners, Progression NI would offer:

- careers advice and guidance provided from the age of 11, through a new professional network of careers advisors
- an online learning account to track learning (module by module) and skills acquisition throughout school, post-school, and in-work learning and training
- proactive linkage and brokerage, working with the recruitment sector, to new courses and employers that would help to boost career progression
- up-to-date labour market intelligence, using the NI Skills Barometer and new regional skills demand analysis, to help guide learner and employee choices.

For employers, Progression NI would offer:

- independent brokerage between the skills system and employers to help employers to navigate the skills system – this would increase demand for investment in skills, to shape and tailor in-work learning, and improve how well businesses use the skills they have
- anonymised access to online learner accounts to help businesses find people with the skills, modules and qualifications they need, or a basis of skills and knowledge to work with
- up-to-date labour market intelligence, using the NI Skills Barometer and new regional skills demand analysis, to help guide employer choices
- linkage, in partnership with the recruitment sectors, for vacancies and potential vacancies, to help employers meet skills gaps.

This would be provided through a single online portal for both learners and employers, with the aim of boosting Northern Ireland's low rates of career progression and productivity, under the banner of Progression NI.

Taken together, Progression NI would offer a smart IAG service, from secondary school through to retirement, tracking learners' learning throughout their lives (module by module), providing proactive careers advice based on learning achieved and local, regional and national labour market intelligence, and provide a route for employers to proactively reach out to learners with the skills they need, or a strong foundation of learning they could build on.

If we are to maximise the investment we put into the skills system in Northern Ireland, it is vital that we find new ways for the skills system to work with learners to shape their careers and shape their learning choices, and to work with employers to help identify and shape their needs and deliver on them. Progression NI could allow a more proactive skills system to design and shape learning requirements from learners and employers and match learners with employment opportunities, bringing skills demand and skills supply closer together.

6. A Northern Ireland displacement and retraining strategy

The Northern Ireland Executive should develop a new displacement and retraining strategy to work with employers and employees in sectors, geographies and companies, at risk from disruption, to broker skills interventions between employers/employees and the skills system.

A displacement and retraining strategy for Northern Ireland would ensure that employees at risk from disruption, and their employers, receive proactive skills interventions, tailored to their needs either to sustain businesses and employment, and allow them to adapt to thrive, or to provide skills for employees to secure new employment opportunities (including matching them to employers with vacancies) if they need to in the future.

As well as preparing in advance for automation and ageing, we know that automation and ageing is already taking place and causing disruption to the economy now. We must be ready to respond to the increasing pace of change, helping employers and employees to adapt to thrive in the context of increasing automation and ageing, and where not possible, helping employees to get the skills they need to progress their career.

5.3 Sharing the costs of transition

7. Reform business rates in Northern Ireland, replacing Small Business Rates Relief with a new Small Business Productivity Credit worth around £20 million a year to be spent by small and medium enterprises (SMEs) on skills investment.

In Northern Ireland, businesses with small properties receive a rebate on their business rates of up to 50 per cent. The rebate has been in place since 2010 and has been extended to 2019. It is worth up to £20 million per year, with over 20,000 businesses receiving the rebate each year (DFP 2016). At the same time, we know SMEs are much less likely to engage with the skills system, and have far lower rates of productivity on average than larger companies (Kibasi et al 2018). The growth of SMEs is vital to Northern Ireland achieving higher levels of productivity.

The Small Business Rates Relief should be replaced with a new Small Business Productivity Credit worth £20 million per year, designed to encourage small businesses to invest to improve productivity levels and grow. A key element of this would be the ability to use Productivity Credit to invest in skills provision, ensuring that public investment in the tax rebate goes to gain a further impact in terms of business investment.

Instead of receiving rates relief, SMEs would receive a Productivity Credit which they could spend on set investment activity designed to boost productivity. A key element of this would be investment in skills, in business practices, and in skills utilisation. The Credit would be administered by the Northern Ireland Executive and redeemable against preapproved activity, against a productivity plan developed for the business as a whole.

Employer investment in skills has been static across the UK, despite increasing skills shortages and underutilisation of skills within the workforce. The costs of preparing and responding to automation and ageing will be significant, and should not be borne by government alone. As public funding continues to be constrained, further scrutiny needs to be placed on no-strings tax rebates such as the Small Business Rates Relief, to see whether precious public funding can be better spent on delivering the outcomes that Northern Ireland needs.

8. A new learning account, called a Progression Account, should be introduced in Northern Ireland aimed at those in lower-paid roles and sectors.

The Northern Ireland Executive should introduce a new form of learning account called a Progression Account (PA). The accounts would be aimed at lower-income workers to be spent on learning and training with the aim of delivering career progression, pay increases and potentially productivity increases within the employer too. PAs would require a sponsoring employer willing to provide career progression on successful completion of learning outcomes, and could be matched by employer investment (including Productivity Credits – see recommendation 7). PAs could be topped up for certain workers, for example in companies or sectors deemed to be at risk of disruption from automation and technological change.

Progression Accounts would be worth up to £1,000 per year and, and would be able to be carried-over from year to year up to three years, before being reset. This would offer an incentive to workers to use or lose PA funding at least every three years.

Introducing 10,000 Progression Accounts in Northern Ireland worth £1,000 would cost £10 million per year.

9. The UK government should replace EU funding for skills and apprenticeship provision in Northern Ireland post-Brexit (through UK government funding to replace European Structural Funds).

The UK government should commit to, at least, replace lost EU funding for skills and apprenticeship provision in Northern Ireland, following Brexit, protecting existing investment in skills to tackle low and no qualifications in Northern Ireland.

Currently, Northern Ireland will receive over €500 million between 2014 to 2020 through the European Regional Development Fund (ERDF) and Northern Ireland European Social Fund (ESF) (European Commission 2018). A significant proportion of skills provision in Northern Ireland is funded through this EU funding. Following Brexit, whether in March 2019 or following any transition period, this funding will end. The UK government has not made clear whether or how it will replace lost EU funding following Brexit. Without replacement funding, there is a clear risk that skills provision diminishes in size and effectiveness. This problem would be particularly acute in Northern Ireland, given rates of no and low qualifications in the population.

5.4 A coherent skills system

10. Northern Ireland should establish cross-cutting 'missions' for the skills system to address the key challenges and future changes facing Northern Ireland.

The Northern Ireland Executive should come together to establish key long-term priorities or 'missions' for the Northern Ireland skills system. Bringing together learners, business, schools, colleges, universities and training providers, the Department for the Economy and the Department of Education, these 'missions' would cut across individual

parts of the system, departments and government to enable the Northern Ireland skills system to work in collaboration against key priorities.

Once chosen, these long-term 'missions' would be used to set clear plans and targets for the skills system in Northern Ireland, and align policy and activity into 'missions' rather than risk siloes across government or the system. In our view, options for 'missions' for Northern Ireland could include (among others):

- transition from upper secondary school – delivering high-quality careers for young people
- improving career progression, pay and the quality of work for mid-career workers
- boosting productivity within the everyday economy
- the opportunities of ageing
- the opportunities of automation and technological change
- widening participation, retention and post-qualification outcomes.

A Mission Oversight Group should be established at the national level to assess delivery and data against these missions, with representatives of learners, employers, government and the skills system.

Northern Ireland's skills system needs to face up to a series of significant existing challenges and future changes. By establishing key cross-cutting 'missions' across the skills system, government, business and the general public could together identify and tackle these significant challenges facing Northern Ireland over the coming decades.

11. Regional 'mission' groups should be established to develop collaboration across the skills system at the regional level.

The Northern Ireland Executive, through the Department for the Economy and Department of Education, should establish Regional Mission Groups to drive collaboration across the skills system at the regional level, to deliver against the key 'missions' established as part of recommendation 10. These would build on the current Area Learning Committees model in Northern Ireland to encourage collaboration at

the regional level across the skills system (including schools, colleges, universities and other training providers), and bring greater business and learner engagement to focus on the key priorities facing the skills system. This could include how public funding can be used in the most coherent way, and investing in the most impactful activity based on outcomes rather than input funding.

Throughout our research we have heard views that Northern Ireland's skills and education system could improve its levels of coherence and collaboration. This has included the view that there is unhelpful competition between schools and colleges and a lack of collaboration across post-14 education that could mean the system is unable to place pupils, learners and students at the centre, with administrative divides that risk getting in the way of learners' choices and access to the best learning routes. Regional Mission Groups, alongside the national Mission Oversight Group would help to focus the skills system on collaborative working to achieve key social and economic outcomes for learners, employers and for Northern Ireland as a whole.

12. The Northern Ireland Executive should establish an outcomes-based approach across post-16 education and learning, introducing 'outcome agreements' across the skills system.

This outcomes-based approach would see the introduction of 'outcome agreements' agreed between providers and the Northern Ireland Executive, outlining the impacts aimed for by each provider, activities to support them, and agreed measures and targets for improvement. The outcomes should take account of the key cross-cutting 'missions' developed (through recommendation 10), and have a key role for Regional Mission Groups (recommendation 11), to agree ambitions around key outcomes such as improved career progression and pay (and reduced low pay and in-work poverty), reduced economic inactivity, rates of low/no qualifications, increased productivity, widening participation, greater knowledge exchange and innovation development and diffusion.

An outcomes-based approach should support the structures of the skills system and its funding mechanisms to adapt to enable learners' choices, and employers' needs, rather than risk historical funding patterns

or administrative divides dictating the routes available to learners. Throughout our research we heard of the difficulties policymakers in Northern Ireland face in trying to move away from input targets and funding, whether in relation to moving away from historical levels of student places for particular parts of the skills system (such as universities), moving away from historical funding levels or even particular courses (such as teacher training, and so on). Moving to an outcomes-based approach could allow judgements on funding and provision to be based on what they will achieve, improving value for money and delivering greater impact from constrained resources.

5.5 Taking the opportunity of city deal(s)

13. Northern Ireland's City Deal(s) should place employer investment in skills, career progression and boosting productivity at their heart through capital investment and procurement

The capital investment, procurement contracts, and governance structures developed through City Deals in Northern Ireland should place skills investment at their heart, as a key way of driving inclusive economic growth.

Given existing economic challenges around low pay, productivity and career progression, City Deal investment offers the opportunity to address existing weaknesses in an inclusive way. The City Deal priorities should ensure that capital investment and procurement provides a skills legacy for the people of Northern Ireland.

There is also a strong potential for City Deal(s) to provide a new framework for collaboration between colleges, local government, the Northern Ireland Executive and the UK government. With significant capital investment, including a focus on digital innovation, City Deal(s) offer a unique opportunity and one that should be utilised for the region in question but also for Northern Ireland as a whole.

Given the breakdown of power-sharing in Northern Ireland there is a clear risk of stasis in relation to education and skills. Furthermore, with funding constrained across the public and private sectors, the additional capital funding brought by City Deal(s) is even more precious than

it usually would be. It is crucially important that the procurement and projects delivered through the additional City Deal(s) capital investment is used to help contribute to preparing Northern Ireland for the key challenges of automation and ageing, and pilot and test skills interventions that can best prepare and respond to the disruption Northern Ireland will face over the coming years.

5.6 Delivery of existing policy – what needs to stay the same?

The breakdown of power-sharing in Northern Ireland has risked policy stasis across Northern Ireland. While the Northern Ireland Executive is able to develop some new strategies, the unintended consequence of the breakdown of power-sharing has been to provide a period of relative no-change for the skills system in Northern Ireland. In some ways this has been welcome, and allowed recent structural, governance and funding changes to bed in. However, given the significant changes brought by automation and ageing on the horizon, the significant challenges facing the Northern Ireland economy here and now, and the age of some of the skills and economic strategies in Northern Ireland, there is a need for refresh and renewal (and potentially replacement) of some of the existing strategies, many of which expire in 2020. This is particularly the case for strategies that have been paused since the breakdown of devolved government, including for example the draft Industrial Strategy for Northern Ireland (DfE 2017).

However, there are a number of clear strengths to build on. Northern Ireland's colleges have come through the merger and ONS reclassification as stronger bodies able to deliver greater impact. Together with the Northern Ireland Executive, they have worked well to deliver graduate employment programmes such as Assured Skills and to move into R&D and Innovation, supporting a range of SMEs, in areas usually the reserve of universities. Furthermore, unlike in Scotland, the college sector has retained a level of flexible provision without such a focus on full-time courses, and on courses aimed at older learners. More widely, Assured Skills is a clear example of how economic development and skills can work closely in Northern Ireland, and how employers can be involved well in shaping provision and utilising skills.

In refreshing, renewing and replacing the policy strategies within skills and the economy in Northern Ireland there is a need to focus on delivering coherence across the Northern Ireland skills system, to focus the system on key missions and on outcomes, and to build on these strengths to deliver a skills system that can prepare Northern Ireland for the future it faces. Some of the changes required need not wait for the politicians to return, but where political decisions are required, there is a clear need to get the thinking in place now, ready for when the devolved assembly is back up and running.

5.7 Summary

Northern Ireland's current skills system has many strengths. However, it needs to improve current levels of collaboration so that it can help to address existing social inequalities and economic weaknesses more effectively. Equally, a more coherent skills system would deliver greater efficiencies, potentially freeing up resources, reducing unhelpful duplication, and delivering greater impact.

Given the prospect of automation, technological change, ageing, and wider economic change that is forecast to bring huge disruption to Northern Ireland over the coming years, the need for a 21st century skills system is all the greater.

We believe that to transition successfully from the Northern Ireland of today to meet the opportunities of the future, we must see significant increases in the participation rate for over-21s in Northern Ireland, which through our recommendations would see a transition cost of £100 million per year by 2025 in additional spending on lifelong learning, to be funded by private or public funding, or by reprioritising existing spend.

Taken together, these recommendations would set Northern Ireland among the world leaders in preparing for automation and ageing by reshaping the priorities of the skills system to focus on contributing to higher-quality work through increased career progression rates and productivity levels. They would deliver a lifelong learning revolution in Northern Ireland, increasing participation rates to among the highest

in Europe by 2025, whether through new lifelong learning routes alongside Northern Ireland's existing FE, HE, training and apprenticeship learning routes or not. They would begin the work of paying for the costs of transition to an economy ready for the age of disruption we face, sharing the costs between employers and the public. Finally, these recommendations would bring new coherence to the Northern Ireland skills system, through new agreed 'missions', Regional Mission Groups and the introduction of outcome agreements so that the system can better focus on the needs of learners and employers, rather than allow administrative divides to dictate learning routes.

6. RECOMMENDATIONS FOR A 21ST CENTURY SKILLS SYSTEM IN SCOTLAND

The skills system in Scotland has faced significant reforms in recent years. The merger of colleges and the introduction of outcomes-based funding for colleges and universities have seen governance changes across further and higher education. The ONS reclassification of colleges as public bodies, the introduction of the UK-wide Apprenticeship Levy, the creation of Foundation and Graduate Apprenticeships and multiple policy and governance reviews and commissions – including Developing Scotland’s Young Workforce, the Commission on Widening Access, the Learner Journey Review, and the recent creation of an Enterprise and Skills Strategic Body – have seen significant change in Scotland.

A common theme of these changes has been to try to develop a coherent skills system, reducing duplication and increasing impact in relation to key Scotland-wide outcomes. This has created a strong foundation for the skills system in Scotland. However, the next few years will be about delivery and realising the potential opportunities from the decisions and policy directions chosen. Over the same period, we have seen a focus on young people and a reduction in flexibility on offer to learners and employers from the skills system as a whole in Scotland.

Overall, in the context of the significant disruption we will face through automation, technological change and ageing, Scotland has a number of strengths to build on. However, without question, the skills system in Scotland has some way to go before it can be described as ready for the level of change we will face.

There are a number of new bodies and new policy agendas that we believe the following recommendations can contribute to. The new Enterprise and Skills Strategic Body and its new Strategic Plan will be key to seeing a number of our recommendations become reality (Enterprise and Skills Strategic Body 2018). Likewise, the Scottish Government's recently announced careers strategy for Scotland – stemming from the Learner Journey Review – and the forthcoming future Skills Action Plan, both key parts of the Scottish Government's Programme for Government, will be key areas where our recommendations can achieve an impact.

We believe these recommendations support the direction of travel in relation to skills in Scotland. As an example, the recent announcement of a Fair Work First approach³ to employers accessing public support is in keeping with our proposals for a much more contingent approach within the skills system, whereby precious public investment is provided, but contingent on achieving the impacts we wish to see. We hope, as a whole, that these recommendations are therefore in line with existing policy – albeit while stretching it further to have an even more ambitious impact.

SUMMARY OF RECOMMENDATIONS

Our recommendations would build on existing policy and strategy to deliver the following.

- A Scotland best-prepared for automation and ageing, leading the world in meeting the challenges and taking the opportunities of automation and ageing through a new Committee on the Future Economy (CoFE), and Automation Readiness Index.
- By 2025 a Scotland where every young person is engaged in learning or training until the age of 21, whether through earning and learning or in the classroom, setting every young person up for a career with prospects.

³ For further information see <https://news.gov.scot/news/fair-work-first-announced-by-fm>

- By 2025 an additional 100,000 older learners each year engaged in formal in-work training, getting Scotland ready for automation and ageing. Designed to boost career progression, tackle low pay, and boost productivity in Scotland this would place Scotland among the best in Europe for adult participation rates at a cost of £200 million per year.
- A revolution in lifelong learning in Scotland – a new Lifelong Learning Commission established to design a new 'nano-learning' Technical Education route (TE) to substantially increase participation among over-21s.
- A Scotland ready to respond to automation and ageing through a new Displacement Training Service.
- Smart IAG able to track learners' learning throughout their lives, provide proactive careers advice based on local, regional and national labour market intelligence, and able to broker job opportunities between employers and learners to bring skills demand and supply closer together.
- An enhanced Individual Training Account, providing £1,000 per year, carried over for up to three years, for 3 0,000 lower-paid workers annually (worth an additional £25 million per year).
- A new £250 million per year Productivity Credit, replacing the Small Business Bonus to boost productivity-enhancing business investment in Scotland, including skills provision.
- A skills system defined by the principles of progression and productivity, and focused on clear outcomes to prepare Scotland for the future, and contribute to delivering inclusive growth.

6.1 Preparing Scotland for automation and ageing

1. A Committee on the Future Economy.

The Scottish Government should establish a short-life Committee on the Future Economy. Based on the Committee on the Future Economy

(CoFE) in Singapore (CoFE 2018), and working closely with the Scottish Government's Council of Economic Advisors,⁴ the committee would be tasked with outlining strategies for preparing and responding to automation and ageing. A key theme for the committee would be the skills provision required to prepare and ready Scotland, and respond to ensure it is in the best possible position to take the opportunities, and meet the challenges, of automation, ageing and economic change. The Singapore CoFE was established in 2016 and reported in 2018, with a Future Economy Council tasked with ensuring delivery against the CoFE recommendations.

From the perspective of the skills system the CoFE would be tasked with:

- developing an Automation Readiness Index for Scotland – with delivery strategy – and a key skills element
- developing an Ageing Readiness Index – with delivery strategy – and key skills element
- developing a Disruption Early Warning System – identifying sectors, geographies and companies at risk from ageing or automation-related disruption – designing skills interventions to follow (see recommendation 5 below – for a new displacement training service)
- considering how digital technologies can be supported across the economy, including digital skills needs and the inclusion of digital skills into the curricula across the skills system.

A Committee on the Future Economy for Scotland could ensure that Scotland leads the world in preparing for ageing and automation.

Automation and ageing are two of the biggest future challenges that Scotland faces. Around 46 per cent of jobs in Scotland are at high potential of significant change through automation. Equally, the working-age population will decrease significantly relative to the pensioner population – it would take around 410,000 additional people of working age to come to Scotland by 2030 just to maintain current ratios. At the same time just under 60 per cent of the workforce of 2040 have already left compulsory education (Callander et al 2018).

⁴ For further information see <https://beta.gov.scot/groups/council-of-economic-advisers/>

We need a political and cross-country focus on automation and ageing to be ready to take the opportunities on offer and minimise the potential negatives. There is a key role for the skills system, particularly vocational lifelong learning, to get Scotland ready and to make Scotland a world-leader in preparing for automation and ageing.

6.2 Preparing learners and workers for automation and ageing

2. A new national ambition should be set to retain 100 per cent of under-21s in the skills system by 2025 – whether earning and learning, or in college or university. A key element of this would be replacing the compulsory school-leaving age of 16 with a new compulsory skills participation age of 18 in Scotland, creating a legal duty for under-18s to be undertaking an apprenticeship, traineeship, or be in school, college or university.

The Scottish Government should set a clear national ambition to retain 100 per cent of under-21s within the skills system by 2025 – whether earning and learning, or in the classroom. As part of this, the Scottish Government should legislate to introduce a new compulsory skills participation age of 18 years old, replacing the current 16-year-old school-leaving age.

This would see all 18-year-olds retained within the learning system, ending the option for children to enter employment into poor-quality jobs, with no training and learning, offering poor prospects for their future. The 100 per cent ambition for all under-21-year-olds would aim to increase the numbers of under-21s retained within the skills system for longer, whether through apprenticeships, traineeships or through college or university.

Our declining working-age population, relative to our older population, means we must get the most out of the potential of the whole of our population. At the moment we are letting too many young people down. Too many under-18s currently leave school into negative destinations, or indeed into outcomes termed as positive destinations that may be no such thing.

Equally, too many under-21s leave the skills system never to return. Given automation is likely to lead to significant disruption to future careers, with a greater requirement to reskill and retrain throughout people's lives, retaining greater numbers of young people within the skills system for longer will be important.

Crucially, for this recommendation to be successful, we will need to see learners retained by the most impactful parts of the skills system for them as individuals, as measured by outcomes, rather than, for example, pupils staying in school through to 18 regardless of whether that would be in their best interests.

Scotland's school-leaving age is 16 years old, meaning pupils can leave compulsory education as early as midway through S4 (the fourth year of secondary school), some at the age of 15. While this is in line with Wales and Northern Ireland, since 2015 the participation age in England has been 18. Across Europe, a number of countries have a compulsory participation age of 18 including Belgium, Germany and the Netherlands.

This proposal would help to increase skills levels and instil a habit of learning among young people that we hope would be continued throughout their lives. It would also help to maximise and realise the potential of all our young people. Finally, it would help to redress the inequalities in how we invest our skills funding, with those that enter university seeing far greater investment, for far longer, than those that go through other learning routes (or none at all).

The population of 16–20-year-olds in Scotland will drop between now and the mid-2020s, meaning that holding existing levels of funding steady could see increases in the skills participation rate for 16–20-year-olds. Between 2016 and 2021 the 16–20-year-old population is projected to drop by over 30,000 young people (from 312,000 in 2016 to 281,000 in 2021) (NRS 2017). The number of 16–20-year-olds in Scotland is projected to remain lower than current levels between now and at least 2041.

3. A new national ambition to increase skills participation rates among over-21s in Scotland to 40 per cent of 21–24-year-olds and 20 per cent of 25–39-year-olds in learning, seeing over 100,000 additional learners in Scotland each year by 2025, among the highest participation rates in Europe.

The Scottish Government should move to bring participation in lifelong learning up to among the highest rates in Europe to ensure we are ready for automation and ageing. Denmark, Finland, Norway and Sweden have some of the highest rates of participation rates for 25–34-year-olds in Europe, with between one-quarter and one-third in formal education or training (Eurostat 2018). Singapore has moved to increase the numbers of its people training each year, now reaching a participation rate of over 20 per cent for 20–40-year-olds (DSS 2018). As we outlined in chapter 4, Scotland's current participation rate for 21–24-year-olds is 37 per cent and for 25–39-year-olds is 12 per cent.

Automation, technological change and ageing will bring huge disruption to Scotland over the coming years, with 46 per cent of jobs in Scotland at high potential of change through automation. At the same time, we know that just under 60 per cent of the 2040 workforce have already left compulsory education (Callander et al 2018). A focus on young people will be required, but it will not be enough. We will need to significantly increase opportunities to upskill and reskill for over-21s in Scotland.

The Scottish Government should set a new national ambition to increase the skills participation rate to 40 per cent and 20 per cent by 2025 for 21–24-year-olds and 25–39-year-olds respectively. This would require an additional 100,000 people to be engaged in the skills system each year in Scotland. This would take Scotland's participation rate to be among the best in Europe, behind only the Nordic countries, and beyond the level of Singapore.

This will require a revolution in the lifelong learning offer in Scotland.

The costs of this transition will be significant. Assuming an equivalent of 50,000 full-time equivalent (FTE) this would require additional

investment, whether from public or private sources or reprioritisation, of at least £200 million per year.⁵

4. Introduce a new Technical Education (TE) in-work learning route (alongside FE and HE), based on the 'nano-learning' principle – fully flexible, a mix of online and face-to-face learning, modular and fully accessible – aimed to drive career progression among over-21s in work.

The Scottish Government, working with the Enterprise and Skills Strategic Board, Scottish Funding Council (SFC) and Skills Development Scotland (SDS), should introduce a new lifelong learning route – called Technical Education (TE) – that would sit alongside further education (FE) and higher education (HE).

TE would be based on a 'nano-learning' principle, and aimed at over-21s in work, with the ambition of driving progression and pay increase outcomes for low-paid and low-skill workers, and driving productivity among the everyday economy in Scotland. The explicit output aim of TE would be to increase skills participation rates among over-21s in Scotland, boosting upskilling and reskilling provision for older workers in Scotland.

The 'nano-learning' principle would see full flexibility of learning, whereby learners and employers can build learning module by module, fully tailored to their needs, undertaken with the full range of flexibility – everything from short bursts of intense learning, through to very part-time low-intensity learning. TE would employ a mix of online and face-to-face provision, made up of FE, HE and bespoke TE modules, delivered through a Scotland-wide online portal, with face-to-face provision delivered through existing providers (colleges, universities and training providers).

The nature of TE should make it more accessible to small and medium enterprise (SME) workers and employers and the self-employed than existing provision, and help to manage automation and drive productivity in Scotland.

⁵ Assuming a figure of 50,000 FTE at a cost of £4,000 per FTE based on the cost per FTE for college teaching in Scotland of £3919.83 (SFC 2018).

5. Create a new Displacement Training Service to develop skills interventions for sectors, geographies and companies at risk from disruption from automation.

A new Displacement Training Service should be established by the Scottish Government, its agencies, employers and employee representatives, designed to meet the needs of employers and workers facing automation-related disruption. This should build on the newly-announced 'national retraining partnership' announced in the Scottish Government's Programme for Government (Scottish Government 2018a).

Based on the PACE (Partnership Action for Continuing Employment⁶) model, currently in operation through Skills Development Scotland (SDS), it would see a service designed to broker skills interventions between employers and employees and the skills system, including tailoring skills provision to need. PACE sees over 20 organisations working in partnership through local PACE teams to respond quickly when redundancies are planned or unscheduled, to broker skills interventions and link employees at risk to new opportunities in the labour market.

A new Displacement Training Service would see proactive support delivered 'upstream' prior to the risk of redundancy, working with employees and employers working in sectors, geographies and in individual companies deemed to be at high risk of automation-related disruption, using the Disruption Early Warning System outlined in recommendation 1. The displacement service would, as with PACE, work in partnership across Scotland to deliver proactive local support, through local teams, brokering skills interventions with the skills system, and working with employers and workers to develop tailored training and learning, helping employers and employees to navigate disruption in advance of it occurring.

Preparing for the disruption that will be caused by automation and ageing in the future is clearly necessary. Planning ahead is not enough alone, however, as related disruption is taking place now. We need new

⁶ See for further information <https://www.skillsdevelopmentscotland.co.uk/what-we-do/employabilityskills/partnership-action-for-continuing-employment-pace/>

interventions aimed at helping people to respond when disruption occurs. We currently do not have sufficient provision in place – whether through public or private funding – to help the existing workforce, employers and the economy to adapt to the changes, and to offer brokerage between the existing skills system and employers and employees, and to work with employers and workers to tailor new skills provision to their specific needs.

6. A new smart Information, Advice and Guidance service for Scotland

The Scottish Government's proposed new online learner account, recommended through the recent Learner Journey Review, is planned to be implemented by 2019, allowing learners to track their attributes, skills and qualifications, and link them to learner choices and course applications (Scottish Government 2018b). This could be an important innovation.

The Scottish Government should go further, using the online learner account over time to link employers to individuals with specific skills, qualifications and attributes, tracking learning at the module level and allowing the skills system and employers to proactively reach out to people with the range of experience and skills they need. The Scottish Government's Programme for Government announced it would create a new careers strategy by the end of 2019 (Scottish Government 2018a). We believe the aim of this strategy should be to deliver a new smart IAG service for Scotland.

Furthermore, the Scottish Government should build a strong element of labour market intelligence into the online learner account, building on SDS' existing Regional Skills Assessments, to develop an equivalent of Northern Ireland's Skills Barometer to undertake skills assessment at the national, regional and local level and to provide advice to learners based on this and their existing learning record.

Taken together, this would build the online learner account into a smart IAG service, tracking learners' learning throughout their lives (module by module), and by skill, attribute and competency, providing proactive careers advice based on learning achieved and local, regional and

national labour market intelligence, and providing a route for employers and the recruitment sector to proactively reach out to learners with the skills they need, or a strong foundation of learning they could build on.

Qualification levels in Scotland are high compared to the rest of the UK and elsewhere in the world. However, skills utilisation is poor and the gap between demand and supply of skills, particularly at FE level, is wide. Smart IAG could allow a more proactive skills system to design and shape learning requirements from learners and employers, and match learners with employment opportunities, bringing skills demand and skills supply closer together.

6.3 Sharing the costs of transition

7. Replace the Small Business Bonus with new Productivity Credits worth around £250 million a year to be spent by businesses on productivity-enhancing investment.

In Scotland, businesses with small properties receive a rebate on their business rates of up to 100 per cent. This tax rebate is worth up to £226 million per year, with over 100,000 businesses receiving the rebate each year (Scottish Government 2017). At the same time, SMEs are much less likely to engage with the skills system, and have far lower rates of productivity on average than larger companies (Callander et al 2018). The growth of SMEs is vital to Scotland achieving innovation and higher levels of productivity.

The Small Business Bonus should be replaced with a new Productivity Credit worth £250 million per year, designed to encourage businesses to invest to improve productivity levels and grow, and in particular SMEs and businesses in low-productivity sectors. This would ensure that public funding for businesses would be contingent on achieving the desired outcome – in this case, improved productivity. A key element of this would be the ability to use Productivity Credit to invest in skills provision.

Currently, large property businesses pay a Large Business Supplement to help fund the Small Business Bonus. Large property businesses would still pay the Large Business Supplement but would receive Productivity

Credits in return. Likewise, small property businesses would still receive a rebate on their business rates, but rather than in cash, it would take the form of Productivity Credits, to boost business investment, including on skills provision.

Employer investment in skills has been flat across the UK in recent years, despite stagnant productivity rates and rising skills shortages (UK DoE 2018a). The costs of preparing and responding to automation and ageing will be significant, and should not be borne by government alone. Building on the Scottish Government's new 'Fair Work First' principle, public funding should be contingent on impact. Productivity Credits would retain a tax rebate for businesses in Scotland, but would make it contingent on investing the rebate on productivity-enhancing activity – including skills investment. As public funding continues to be constrained, further scrutiny needs to be placed on no-strings tax rebates such as the small business bonus, to ensure precious public funding is spent on delivering the outcomes that Scotland needs.

8. Scotland should introduce new Enhanced Individual Training Accounts.

Skills Development Scotland (SDS) recently reformed Scotland's longstanding Individual Learning Accounts, to develop new Individual Training Accounts (ITAs). ITAs provide up to £200 to workers to contribute towards training costs for ITA-approved courses. The Scottish Government should work to build on the new ITAs to provide an enhanced package of funding, aimed at lower-income workers to be spent on approved training and learning with the aim of delivering career progression, pay increases and potentially productivity increases within the employer too. Enhanced ITAs would require a sponsoring employer willing to provide career progression on successful completion of learning outcomes, and could be matched by employer investment (including Productivity Credits – see recommendation 7).

Enhanced ITAs would be worth up to £1,000 per year and, unlike existing ITAs, would be able to be carried over from year to year up to three years, before being reset. This would offer an incentive to workers to use or lose Enhanced ITA funding at least every three years.

An Enhanced ITA worth £1,000 would cost up to an additional £25 million per year, assuming existing take-up levels.⁷

6.4 Greater coherence across Scotland's skills system

9. Outcomes-based funding across skills and enterprise activity.

Scotland's skills and enterprise agencies will be central to preparing for automation and ageing, and helping employers and workers to do likewise. In doing so, it is our view that the skills and enterprise agencies should be focused on improving the quality of work in Scotland through two priorities:

- boosting productivity among employers, particularly among the 'everyday economy'
- boosting career progression and pay among workers, particularly lower-paid workers.

Scotland's new Enterprise and Skills Strategic Board has published a strategic plan for skills and enterprise activity in Scotland (Enterprise and Skills Strategic Body 2018). As it develops its activities for the coming years, we believe it should put in place an outcomes-based approach across the skills and enterprise agencies in Scotland.

This would see a clear focus on boosting progression for employees and productivity for employers, in line with the inclusive growth principles set out by the Scottish Government's economic strategy. To deliver this outcomes-based approach, outcomes-based funding should be extended across the full range of the skills system, and should be trialled within enterprise activity – building on the Scottish Government's newly announced 'Fair Work First' principle – ensuring that the skills and enterprise system is helping Scotland to prepare for automation in the best possible way, and more closely connecting economic strategy to skills and enterprise activity.

Some parts of the skills system have adopted outcome agreements, with college and university outcome agreements continuing to develop

⁷ The last data prior to the replacement of ILAs in Scotland with new ITAs shows a take-up of just over 30,000 accounts (SDS 2017).

since their introduction in 2012/13. To get ready for automation and ageing, and to ensure an overriding focus on the twin priorities of productivity and progression, we believe Scotland's enterprise and skills agencies need to adopt an outcomes-based approach to ensure that every penny of public investment goes to delivering these outcomes in the best possible way.

6.5 Delivery of existing policy – what needs to stay the same?

The recommendations outlined in this report would see significant changes for the skills system in Scotland. In our view, they would work to ready Scotland for the significant changes we face through automation and ageing, making Scotland one of the best-placed countries in the world to embrace the opportunities of automation and ageing, and address its challenges.

However, these recommendations build on a number of existing strategies and policies, developed in Scotland. There is a lot of good work already taking place and under way, and what needs to stay the same is as important as what needs to change. Given the scale of reform the skills system in Scotland has seen in recent years, there are a number of things that should be kept in place, and seen through to implementation.

The Scottish Government's newly announced 'Fair Work First' principle for government support for business is a welcome one. We believe this to be in line with a number of our proposals which place greater contingency on public funding, to gain greater impact from it.

The creation of an Enterprise and Skills Strategic Board is welcome, and its aim of bringing greater alignment across the skills system (and the enterprise agencies) is the right one. Its new strategic plan sets out a clear direction for skills and enterprise activity in Scotland (Enterprise and Skills Strategic Board 2018). The Strategic Board should play an important role in preparing Scotland for the future changes brought by automation and ageing, as well as the existing challenges facing

Scotland's economy. We hope our recommendations are helpful to the Strategic Board's ongoing development and delivery of its strategic plan.

Equally, the Developing Scotland's Young Workforce agenda remains crucial, and the focus on its continuing implementation should remain, even as youth unemployment rates have dropped significantly. Our recommendations to focus on lifelong-learning provision in Scotland should not be seen as deprioritising young people, but instead bringing the quality of our skills offer for those beyond the early stages of their career up to the standards we expect for young people. Likewise, the Learner Journey Review for 15–24-year-olds, includes a number of important recommendations which should improve the coherence of provision in Scotland.

Lastly, the Scottish Government's focus on developing Foundation Apprenticeships and Degree Apprenticeships should continue. To meet our recommendation of increasing the skills leaving age to 18 and our recommendation to set the target of retaining 100 per cent of under-21s in earning and learning or college and university provision, will require greater provision of apprenticeships throughout all levels of qualification.

6.6 Summary

Recent policy and governance changes leave the skills system in Scotland with strong foundations. However, while these changes offer opportunities to develop a 21st century skills system, these opportunities now need to be taken. Given the prospect of automation, technological change, ageing, and wider economic change, bringing huge disruption to Scotland over the coming years, there is a need for the scale of ambition we have for the skills system in Scotland to match the scale of the challenge we face.

The costs of transition and of meeting the challenge of automation, ageing and economic change will be significant, even just in increased skills investment alone. To place Scotland among the best in Europe for adult participation rates by 2025, would need to see an additional 100,000 learners over the age of 21 each year at a cost of at least £200

million per year. The transition costs facing the skills system should be shared and funded through a mix of private and public funding, or reprioritising existing spend.

These recommendations would deliver a lifelong learning revolution in Scotland, increasing participation rates to among the highest in Europe by 2025, through the creation of a new Technical Education learning route, based on the 'nano-learning' principle, alongside Scotland's existing FE, HE, training and apprenticeship systems. It would see a new national ambition to deliver 100 per cent of young people in the skills system until the age of 21 by 2025, introducing a new compulsory skills participation age of 18, replacing the compulsory school leave age of 16. These recommendations would begin the work of paying for the costs of transition to an economy ready for the age of disruption we face, sharing the costs between employers and the public, with the creation of an Enhanced Individual Training Account worth £1,000 per year for lower-paid workers and a new £250 million per year Productivity Credit for business, replacing the Small Business Bonus, and bringing new investment into the skills system in Scotland.

Taken together, these recommendations would place Scotland among the world leaders in preparing for automation and ageing. They would reshape the priorities of the skills system to focus on contributing to higher-quality work, through increased career progression rates and productivity levels, addressing current economic inequalities, and readying Scotland for the future.

7. CONCLUSIONS

Northern Ireland and Scotland, like the wider world, will face significant levels of change over the coming years. The pace and scale of change is likely to increase as we see the effects of automation, technological change and ageing bring disruption across the economy and society. The skills system cannot single-handedly prepare Northern Ireland and Scotland for the opportunities and challenges they will face. However, without question, investing in the skills system, and reshaping and reforming it, will be one of the single most important things that can be done to prepare for, and respond to, the changes we face.

The need for upskilling and reskilling will increase as the world of work changes. The need to address economic weaknesses, including career progression and productivity rates in both Northern Ireland and Scotland, will become even more important as their populations age significantly. The long tail of low productivity present across the UK shows the potential role for the skills system, given its particular ability to reach and influence the 'everyday economy'.

Where change occurs, new risks of inequalities develop. A 21st century skills system will be one that addresses existing inequalities and responds to minimise future inequalities.

This report marks the third in a series of three comparing Northern Ireland and Scotland's skills system, and considering what – in each context – is required to develop a 21st century skills system. Without question the comparative nature of this research has mutually improved our recommendations for both Northern Ireland and Scotland. The strengths of each system has shown that change is possible and necessary.

The scale of the challenges and opportunities we will face over the coming years needs to be met with a similar scale of ambition so that we can deliver a 21st century skills system for Northern Ireland and

Scotland. The last 30 years have been, rightly, about the expansion of higher education to transition our economy from a post-industrial economy to a knowledge-led service economy. The next 30 years need to be as much about how we expand, reshape and deliver a revolution in in-work lifelong learning, to transition our economy through the changes brought by automation and ageing.

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