



SHAPING THE FUTURE

A 21ST CENTURY SKILLS SYSTEM FOR WALES: CHALLENGES AND OPPORTUNITIES

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SUMMARY

Wales faces significant disruptions over the coming years. With fundamental change comes the risk of new inequalities but also the opportunities for far-reaching reform. While global and UK-wide trends such as Brexit and climate change may not be fully within the control of government in Wales, their effects, and who wins and who loses as a consequence, is not predetermined – they will be shaped by public policy decisions and choices here in Wales and at the UK level. At the centre of many of these policy choices will be the skills system and how it can be shaped to meet these 21st century challenges.

In many ways, the opportunities and challenges facing Wales are unprecedented.

Automation and technological change will bring significant disruption to the economy and society in Wales. This is already happening, reaching new sectors and skill levels not previously affected by previous waves of automation. However, rather than jobs vanishing, we are more likely to see jobs changing – bringing new demand for reskilling and upskilling – throughout people's careers. Our analysis shows that Wales has a higher than average number of jobs, with 6.5 per cent (or 130,000 jobs) with high potential for automation. With 81.5 per cent of the 2030 workforce in Wales (and 60.8 per cent of the 2040 workforce) having already left compulsory education, a focus on young people's skills will not be enough.

Brexit, regardless of the future relationship agreed between the UK and EU, is clearly causing significant uncertainty and will continue to cause disruption over the coming years. Currently,

hundreds of millions of pounds of EU funding is invested into the skills system in Wales, whether directly or indirectly. It is unclear whether this funding will still be there after the UK has left the EU, and on what basis. Equally, regardless of any final deal, it seems clear that immigration levels from the EU to Wales are likely to reduce, potentially bringing greater demand for the skills system from employers in Wales.

Climate change and the changing nature of globalisation is causing, and will continue to cause, significant disruption in Wales. We have seen recent closures in Wales within the car and steel industries, and global trends around increasing trade protectionism, which may continue to reverberate through the economy in Wales. Equally, given the recent Welsh government declaration of a climate change emergency, and targets to reach net-zero carbon emissions by 2050, we will need to see a just transition to a carbon-free economy across Wales. This will bring new challenges and opportunities as the transition takes place, with the skills system at the centre of helping change to take place.

Demographic change and an ageing population will also bring huge disruption to Wales over the 2020s and 2030s, with Wales ageing more rapidly than any other nation in the UK. The country will move from having around 33 pensioners per 100 people of working age now, to 36 pensioners per 100 by 2030, and more than 40 pensioners per 100 by the end of the 2030s. The ageing population will mean that Wales needs to do more to get the most out of the remaining working-age population, with the skills system, again, needed to take a key role in helping to manage these changes.

Economic inequalities are high in Wales. With significant change there is the risk of new inequalities being created or existing ones widened. However, that could address these long-standing weaknesses. While employment and inactivity rates have improved in Wales in recent years – following years of underperformance against the UK average – we have begun

to see a worrying increase in zero-hours contract employment over the last year. Likewise, for young people, we see increasing youth unemployment, increasing rates of young people not in education, employment or training (NEET) and high levels of young workers in insecure work. Almost one in six young workers in Wales are in insecure work, which, while lower than the UK average, is something Wales will need to focus on to ensure young people leave the skills system into high-quality jobs that lead to high-quality careers.

The Welsh government seems to be aware of how important the skills system could be over the coming years, developing a number of strategies relating to skills in recent years. To date, however, the scale of the government's ambition with reforms has not always matched the scale of the challenge.

The Welsh government is continuing with reforms to how the tertiary education system is structured in Wales, with a new Commission for Tertiary Education and Research (CTER) due in 2023, and its response to automation through the recent Review of Digital Innovation. It is also moving towards a social partnership approach, with a Social Partnership Act and the adoption of the recommendations of the Fair Work Commission. Its level of ambition will need to increase to match the unprecedented level and pace of disruption we will see.

This report marks the second and final report of our project considering what a 21st century skills system needs to look like to meet the challenges and opportunities that Wales faces. Through desk-based research, literature and data reviews, and face-to-face research with a range of stakeholders within and around the skills system in Wales, we have developed an outline of the attributes we believe a 21st century skills system in Wales needs to display, and a series of recommendations for how Wales can get there. We will need action beyond government alone, and we will need to reshape the economy in Wales, with employers, workers and government all pulling in the same direction. The risks of not doing so are significant, but

the rewards for getting this right could be huge: meeting the challenges and opportunities facing Wales in a way that narrows inequalities and delivers a fairer and stronger economy in Wales.

The attributes of a 21st century skills system in Wales

A 21st century skills system for Wales will need the following.

- To have a clear focus on **delivering a fairer and stronger economy** across the whole of the skills system, helping to manage the effects of automation and ageing – this will likely need close alignment between skills, enterprise and economic policy, as well as a social partnership approach and a focus on fair work. This will give the skills system a greater role in taking the opportunities of automation, and helping to shape who wins and loses through the significant disruptions that Wales faces.
- To deliver a **lifelong learning revolution** in Wales. A focus on young people will not be enough as the effects of automation, Brexit, climate change and demographic change begin to take place.
- To deliver more **modular and bite-sized learning** based on skills as much as qualifications. Flexible provision will be key in ensuring a skills system that works for all of Wales, all sectors and businesses in Wales, and works throughout learners careers.
- **Flexible and responsive curricula** – where change occurs quickly in the economy and society, change needs to happen at a fast pace within the curriculum.
- To work to **unlock demand for skills among employers and employees**. Wales needs to avoid the risk of a 'low skill equilibrium' – where low demand for skills among employers leads to low demand for skills

from employees (and vice versa) – in order to get the most out of the remaining working-age population.

- The right balance between **autonomy and accountability**, to give space to skills providers within an overall policy strategy for the whole of the skills system. Wales should adopt the principle of supported autonomy as a key organising principle for the skills system.

Recommendations: a 21st century skills system for Wales

1. The Welsh government should set clear guidance that a key priority for the skills system as a whole is to support the delivery of a fairer Wales and a stronger economy. This will broaden the role of the skills system into efforts to reshape the economic model in Wales to help to take the opportunities and meet the challenges Wales faces over the coming years, alongside a commitment to education and training as a public good.
2. The Welsh government should replace the existing school leaving age of 16 with a new 'skills participation age' of 18 – this would help to ensure all children are learning whether in the workplace or the classroom.
3. The Welsh government should set a clear target to match some of the highest rates of adult skills participation in the world by 2025, seeing 30,000 additional adult learners at a cost of £60 million per year. This would help to drive a lifelong learning revolution in Wales and to manage the effects of automation, Brexit and an ageing population.

4. The UK government should guarantee full replacement of EU funding for skills in Wales following the UK's departure from the EU. This would ensure secure funding levels to enable long-term planning for the skills system in Wales.
5. The Welsh government should pilot a new 'master apprentice' programme aimed at providing routes for older workers to pass on experience to younger generations. This would help to capture and recognise the learning and experience of older workers to help younger generations.
6. The Welsh government should pilot an Open Institute of Technology – this would provide flexible, modular and bite-sized learning through a mix of online and face-to-face provision across the whole of Wales.
7. The Welsh government should work with key partners to undertake reform of curricula across post-16 education and training. This should develop curricula focused on skills and capabilities rather than solely developing knowledge and testing it, helping the skills system to respond quickly to the fast pace of change in the economy.
8. The Welsh government should adopt a 'fair work first' approach to the skills system. This would help to influence business practices across the economy, and potentially help to drive a longer-term, sustainable economic model.
9. The Welsh government should review the tax levers within its responsibilities as to how they could better unlock skills investment from business – in particular, the small business rates relief scheme (worth £120 million) could be reformed to encourage skills investment and engagement among smaller businesses in Wales.

10. The Welsh government should pilot 'progression agreements' within the parts of the skills system focussed on in-work provision – this would make public investment in some forms of in-work learning contingent on successful completion of learning outcomes by learners, and agreed career progression (such as pay increases or promotion) from employers.
11. The Welsh government should introduce outcome-based agreements across the post-16 system in Wales between national, regional and local levels – this would help to get the correct balance between accountability and autonomy for skills providers in Wales, and promote collaboration rather than competition across the system.
12. The Welsh government should undertake a review of learner and employer engagement to establish new and powerful routes for employer and learner engagement from the classroom up to the national level of the skills system.

1. INTRODUCTION

There are a series of huge trends that will affect Wales and the wider world over the coming years. Automation and technological change is already sweeping across the world and will bring significant disruption to job roles and significant change to the economy in Wales. Brexit and the UK's future relationship with the EU, regardless of where negotiations end up, will likewise potentially have a significant impact on the shape and nature of Wales' economy and society. Climate change and, more broadly, the changing nature of globalisation is already having high profile impacts in Wales, with traditional industries affected, at least indirectly, by significant global trends. At the same time, demographic change will see Wales' population age significantly over the 2020s and 2030s, at a faster pace and to more of an extreme than elsewhere in the UK. Wales enters this period of disruption with continued economic inequalities and a number of economic weaknesses (though with some clear economic strengths too).

Each of these trends has a clear skills dimension, and while Wales' response will not be down to the skills system alone, without a skills system with the attributes required, Wales' ability to respond to these changes will be severely hampered.

How Wales navigates these significant trends will be crucial, and will in many ways be reliant on its ability to successfully develop an education, learning and training system. Wales will need a skills system that can help to prepare its people and its economy for these changes, help shape who wins and who loses within Wales, and also help to equip Wales to compete

internationally, through what will undoubtedly be a period of near-unprecedented change.

This report is the second of two in a project looking at how Wales can develop a 21st century skills system, ready for the changes it faces and able to prepare the people and economy of Wales to take the opportunities and meet the challenges faced over the coming years. This project follows similar work we have undertaken in Scotland and Northern Ireland.

Throughout this report the term 'skills system' is used to describe the post- compulsory, post-16 education, training and learning system in Wales. This includes school, college and university provision, as well as apprenticeships and other types of in-work learning. The report discusses the full range of the skills system, but focusses on the post-school sub-degree level in particular. However, all parts of the system interact, and changes in one will likely lead to knock-on effects for others.

Our work for this project has included desk-based research, a literature and data review and face-to-face research through interviews and research events with key stakeholders from in and around the Wales' skills system. Our first report focusses on the context in Wales and seeks to understand the challenges and opportunities facing the skills system, as well as some of the changes already being put in place to get Wales ready for the future (Fawcett and Gunson 2019). This second report aims to consider what a successful skills system for Wales would look like and provide recommendations for what needs to stay the same and what needs to change to get the skills system in Wales ready for the future.

2. THE CHALLENGES AND OPPORTUNITIES FACING THE SKILLS SYSTEM IN WALES

In our first report, we undertook desk-based and face-to-face research with people in and around the skills system in Wales in order to understand the challenges and opportunities facing it from their perspective. We developed these themes into ten opportunities and challenges (Fawcett and Gunson 2019).

This chapter outlines and summarises those opportunities and challenges, as seen by the skills system in Wales itself. It aims to provide a context within which to understand what needs to change and what needs to stay the same to prepare Wales for the future.

Ten key challenges and opportunities facing the skills system in Wales

1. Automation and technology, causing significant change, redistributing tasks and reworking jobs in Wales.
2. An older population in Wales, ageing markedly from now through to the end of the 2030s.
3. The uncertainty surrounding Brexit, our future relationship with the European Union, and post-Brexit funding arrangements.
4. The changing nature of globalisation and its impact on the Welsh economy.
5. Narrowing Wales' existing economic inequalities and strengthening Wales' economy for the future.

6. Providing a policy and funding environment that offers security, certainty and consistency, while ensuring the skills system is efficient and delivering the needs of learners and the economy.
7. Delivering on the opportunities created by the recent and forthcoming reform to the governance of parts of the skills system in Wales.
8. Developing stronger employer engagement in the skills system, from the classroom level up.
9. Developing stronger learner engagement so that curricula are co-produced between learners, students, employers and providers.
10. Developing a skills system that delivers across Wales' distinct geography, supporting the Welsh language and culture, and enabling people from across Wales fair access to its benefits.

Fawcett and Gunson 2019

2.1. Automation and technology will cause significant change, redistributing tasks and reworking jobs in Wales

Automation and new technologies – such as data analytics, artificial intelligence and new smart technologies – will change the economy and wider society in Wales (and are already doing so). These new technologies are likely to affect skills levels as well as sectors not before touched by previous rounds of automation, and the ability for the further development of 'thinking' technologies is likely to make this wave of automation quite different to previous ones.

However, while automation is likely to fundamentally change the economy as a whole and bring significant disruption, it is unlikely that vast numbers of jobs will vanish. Indeed, previous technological

revolutions have seen jobs, in aggregate, increase. Instead, it is much more likely that we will see significant numbers of jobs change, rather than disappear, with the potential for job quality to improve if managed correctly.

IPPR's own recent analysis for this project found that Wales has a higher proportion of roles with the highest potential for automation – those roles with an estimated 70 per cent or more of tasks that could be automatable – than the UK average. Table 2.1 shows that 6.5 per cent of roles in Wales see a high potential for automation, compared to the UK average of 6.2 per cent. In Wales, this amounts to around 130,000 jobs. Of these jobs, women workers are much more likely to be impacted, as they account for 65.1 per cent of those workers – despite making up only 48 per cent of the total workforce in Wales (Fawcett and Gunson 2019).

Table 2.1: Proportion of jobs in the nations and regions of the uk with a high potential for automation

Nation/region	%
Northern Ireland	6.4
Scotland	7.3
Wales	6.5
English regions:	
East Midlands	6.9
East of England	6
London	5
North East	7.4
North West	6.2
South East	5.2
South West	7.1
West Midlands	6.1
Yorkshire and the Humber	6.7
UK	6.2

Source: IPPR analysis of LFS various quarters and ONS estimates of probability of automation by occupation (ONS 2019a)

However, the effects of automation, and the resulting ‘winners’ and ‘losers’, are not predetermined. It is public policy that can shape the effects of automation and technological change, and skills policy will be crucial. At the individual level, who has the in-demand skills and who does not, and who has the resilience and capabilities to transfer learning and experience from one sector to another, in the face of significant disruption, will be integral factors in determining the impacts of automation. Likewise at the employer level. Similarly, those parts of the world where employers, employees and government pull together in the same direction, and share the costs of transition, will be those that are most likely to succeed through automation.

Furthermore, the nature of automation is likely to mean that focussing solely on young people through the skills system will not be enough. Table 2.2 shows that 81.5 per cent of the 2030 workforce in Wales have already left compulsory education, along with 60.8 per cent of the 2040 workforce. To prepare the whole workforce for automation and technological change is likely to require a focus on lifelong learning – creating a skills system that can stand beside learners, upskilling and reskilling them throughout their careers.

Table 2.2: Proportion of workforce of given year that has already left compulsory education in Wales

Cyfran y gweithlu sydd eisoes wedi gadael addysg orfodol yng Nghymru yn ôl blwyddyn	%
2030	81.5
2040	60.8

Source: Fawcett and Gunson (2019), IPPR analysis based on population projections by year and age from Stats Wales (2019)

For the skills system, automation and technological change will likely need a renewed focus on lifelong learning, and on the full range of flexible provision that can cater to workers learning alongside work, or those learning in intense bursts in between roles. Wales is also likely to require a skills system more consciously.

2.2. An older population in Wales, ageing markedly from now through to the end of the 2030s

The population of Wales is ageing at a faster rate than the rest of the UK, and this will have significant impacts that will continue to be felt over the next twenty years and beyond.

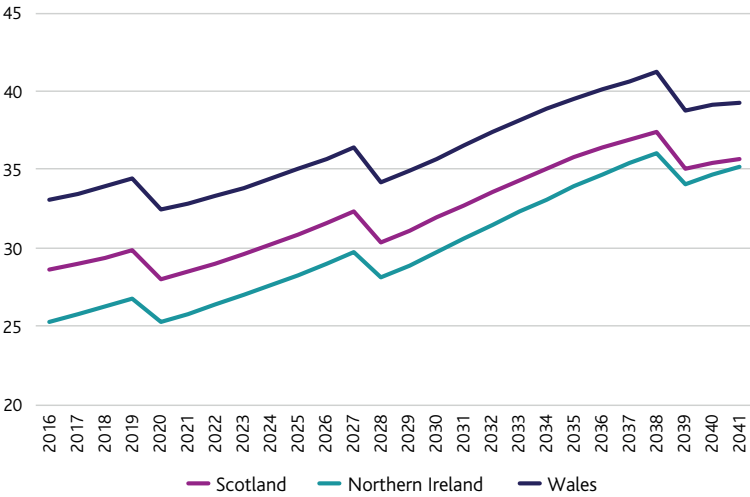
Recent IPPR analysis for this project shows that the dependency ratio in Wales (the number of pensioners per 100 people of working age) is set to rise from around 33 pensioners per 100 people of working age in 2019, to more than 40 pensioners per 100 towards the end of the 2030s (Fawcett and Gunson 2019).

This is higher than the equivalent figures for Northern Ireland and Scotland, and takes account of planned increases in the retirement age over the coming twenty years.

The ageing population in Wales creates a greater need to increase tax revenue and productivity from the remaining working-age population to at least protect living standards and meet increasing demand for public services over the coming years. Finding new ways to boost productivity in Wales, and to ensure the benefits of productivity improvements are shared across Wales, will be crucial to protecting living standards through an ageing population.

Figure 2.1: The proportion of the pension-age population compared to the working-age population is expected to rise significantly over the next two decades

Wales dependency ratio over time (number of pensioners per 100 working-age people)



Source: IPPR analysis based on population projections by year and age using Stats Wales (2019), National Records of Scotland (2017) and NISRA (2017)
Note: We have not included the phasing of the increase in the UK pension age in these calculations. This will take place between Oct 2018–20, moving from 65 to 66; the rise to 67 is planned to take place between 2026–28, 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.

2.3. The uncertainty surrounding brexit, our future relationship with the european union, and post-brexit funding arrangements

The continued uncertainty around the UK’s future relationship with the EU causes significant uncertainty for the skills system in Wales.

The future relationship will clearly have a potentially significant impact on the economy of the UK and Wales, and as such will likely have a significant impact on the skills system. However, it is unlikely that this future relationship and its implications will become clear for some time.

However, it is possible to understand the potential effects of Brexit in relation to immigration and EU funding with more clarity.

Regardless of future deals between the UK and the EU, EU migration is likely to fall from previous levels. This could have a significant impact on skills shortages and skills demand from employers. However, making sure the skills system in Wales is responsive to learner and employer demand will be crucial to ensuring these changing needs can be met.

Given the importance of EU funding to the skills system in Wales, we can be sure that successor funding arrangements to replace existing EU funding will be all- important. As with Brexit more generally, there is currently little detail on the UK government's plans for its Shared Prosperity Fund, which is due to replace EU funding in the UK following Brexit. Hundreds of millions of pounds each year are invested in the skills system in Wales, either directly or indirectly, through EU funding. Ensuring that this is at least replaced pound for pound will be crucial to making sure that the skills system in Wales is able to respond to the Brexit-related changes to demand for skills in the future.

For the skills system, regardless of where Brexit negotiations end up, it seems clear that we should plan for lower levels of EU migration in the future. Depending on how employers respond, this could lead to increased demand for skills development from employers. However, this is only likely if employers are influenced, enabled and encouraged to adopt longer-term business models. Aligning the skills system with economic and enterprise policy and activity will therefore be crucial, so that the skills system can have a role to play in both supply-side (such as skills development

and supply) and demand-side (such as employer skills demand, engagement and utilisation) factors that will be crucial to Wales' future success.

2.4. The changing nature of globalisation and its impact on the Welsh economy

We have seen a long-term decline in the proportion of jobs in manufacturing in Wales, falling from 18 per cent of all jobs in 1998 to 10 per cent of all jobs in 2018 (Fawcett and Gunson 2019). However, at the same time, the proportion of high-skilled roles has increased. Between 2004 and 2018, Wales saw an increasing proportion of high-skill and low-skill roles, and decreases in mid-skill roles.

In recent years – particularly since the adoption of a more protectionist approach to trade policy from a number of countries across the world, and most notably Donald Trump's American trade policies – global trends are being felt keenly in Wales, whether with high-profile examples in steel and car manufacturing, or elsewhere. Likewise, global challenges such as the climate emergency are likely to bring significant changes to Wales as much as elsewhere in the UK, with new economic opportunities and challenges presented by a just transition to a zero-carbon economy.

For the skills system, this is likely to mean a greater need for adaptability and for delivering up-to-date curricula through increased levels of learner and employer engagement, from micro-businesses as much as multi-nationals.

2.5. Narrowing Wales' existing economic inequalities and strengthening Wales' economy for the future

The economy in Wales exhibits significant levels of low pay and low levels of productivity, with high rates of poverty and wide social and economic inequalities.

Wales' median gross weekly earnings for full-time employees increased to £509 per week in 2018, but still represented the second lowest rate of pay across the UK nations and regions; in comparison, the median gross weekly earnings for full-time employees across the UK is £569 per week (Stats Wales 2018a). The gender pay gap in Wales by year (median hourly earnings for full-time employees excluding overtime) was 7.3 per cent in 2018. This is down from 13.7 per cent in 2008 and 17.7 per cent in 1998 (Stats Wales 2018b).

The proportion of low-paid jobs in Wales is also high, with 27 per cent of jobs paid below the real living wage. This is higher than the UK average of 24 per cent, with only the East Midlands showing a higher rate at 28 per cent (Cominetti et al 2019).

Productivity is often regarded as the foundation on which pay rises and increases in living standards are built. While not a direct link, increasing levels of productivity frees up greater potential for workers to benefit. In 2017, gross value added (GVA) per hour worked in Wales was £28.10, compared to £33.70 GVA per hour worked across the UK, £28.30 in Northern Ireland, and £33.10 in Scotland. This places Wales second from bottom of all the nations and regions in the UK, with a productivity level of around 84.2 per cent of the UK average (ONS 2019b).

Looking at the regional level within Wales, there was significant variation in productivity, with a level of £21.90 per hour worked in Powys and £32.40 in Flintshire and Wrexham (ibid). No local region in Wales met the UK average. Since 2010, real productivity growth in Wales has been slow (as it has across the UK), with a total increase of 13 per cent in real GVA compared to an increase across the UK of 15 per cent (ibid).

Improving productivity is crucial to improving Wales' economic performance and narrowing long-standing inequalities. Where productivity gains are delivered is therefore crucial, both geographically but also by sector. Equally important is ensuring those productivity gains are then shared to improve pay and

living standards, particularly for those in low-paid work. There is increasing evidence that a fairer economy is a stronger economy, and using productivity improvements to drive down inequalities could have a mutually reinforcing effect on strengthening the economy and improving economic justice (CEJ 2018). As outlined above, productivity improvements will also be crucial in protecting living standards through demographic change, with automation and technological change offering a clear route to significant potential increases in productivity. How automation is managed, and who wins and who loses through it, is therefore a key question for Wales' economic future.

The skills system clearly has a role to play in helping to influence the economic model and predominant business practices within Wales, in order to drive higher productivity. The skills system could and should be at the centre of helping to shape who wins and who loses from productivity improvements.

2.6. Providing a policy and funding environment that offers security, certainty and consistency, while ensuring the skills system is efficient and delivering for learners and the economy

In recent years, Wales has seen significant policy reforms to parts of the skills system. Public funding cuts over the last 10 years have meant that parts of the skills system in Wales have seen budgets become incredibly constrained. Given the challenges and opportunities facing Wales, a consistent policy direction and long-term budgeting will be required in order to manage reform within the skills system, and to allow it to prepare for the future. This has arguably been achieved for parts of the skills system – including through the Diamond Review for higher education, for example (Diamond 2016). However, for other parts of the system, a clear long-term strategy and funding certainty has not yet been achieved.

2.7. Delivering on the opportunities created by the recent and forthcoming reform to the governance of parts of the skills system in Wales

The forthcoming Commission for Tertiary Education and Research (CTER) offers a significant opportunity to develop a long-term vision for the whole of the skills system in Wales and bring a coherence to the aims and roles of the different parts of the skills system. Bringing sixth form colleges under the umbrella of the rest of the skills system offers an opportunity to foster a collaborative, rather than competitive, approach to skills. This could be essential in the context of the big global and UK-wide challenges and opportunities outlined above. And the three regional skills partnerships (RSPs) established in Wales offer the basis for cascading national strategy to the regional and local level.

With the correct reforms, the combination of CTER and the RSPs could help to outline the new role that the skills system needs to take in Wales, and enable the reforms required to see that new role become a reality. The skills system can lead the way in meeting the opportunities and challenges posed by automation, ageing, Brexit, globalisation and climate change. However, to do so, it will need a new governance structure that develops a clear set of shared aims and ambitions for the skills system, and helps those within the skills system to meet them at the national, regional and local level across Wales. Governance in Wales will need to get the balance right between autonomy and accountability to help achieve these aims.

2.8. Developing stronger employer engagement in the skills system, from the classroom level up

A central part of the skills system's role should be to drive employer engagement in skills in Wales, but also engage with employers to influence their business practices through skills provision.

Our previous research for this project, which examined the Employer Skills Survey for Wales, found that there are significant levels of vacancies in Wales hard to fill due to skills shortages, with 27 per cent of all vacancies defined as 'skill shortage vacancies' in Wales. When asked for the types of skills lacking among applicants, 66 per cent of establishments with a skills-shortage vacancy reported specialist skills needed for the role to be lacking among applicants, with 45 per cent reporting 'solving complex problems' and 'knowledge of the organisation's products and services' lacking among any applicants. Equally, in terms of people and personal skills, 56 per cent of establishments with skills-shortage vacancies reported an 'ability to manage and prioritise own tasks' as lacking among applicants, with 49 per cent reporting a 'lack of team working skills' and 41 per cent lacking the 'ability to manage their own feelings or the feelings of others' in applicants (Department for Education 2019). This shows the need to enable employers to engage with the skills system to develop the skills they need, whether at the level of the classroom, or through new governance arrangements at the local, regional and national level.

2.9. Developing stronger learner engagement so that curricula are co-produced between learners, students, employers and providers

Through our face-to-face research, we repeatedly heard of the need and desire to improve learner and student engagement across the skills system in Wales. This was also a theme highlighted in the Hazelkorn Review in 2016.

Increased engagement with students and learners will be important to ensure that curricula are constantly adapting to change, and to ensure that outcomes around access, retention and graduate outcomes are as strong as possible.

As with employers, finding new ways to ensure that learners are co-designing curricula and are fully represented at the local,

regional and national level will be crucial to shaping the skills system to respond to the opportunities and challenges it faces.

2.10. Developing a skills system that delivers across Wales' distinct geography, supporting the Welsh language and culture, and enabling people from across Wales fair access to its benefits

Wales has a unique geography, with a strong cultural heritage – not least through the Welsh language. These are potentially huge opportunities for Wales, not only in terms of retaining a cultural link from the present to the past, but also more functionally in economic terms. The skills and interests developed through delivering a million Welsh speakers – as the Welsh government wishes to do through its Cymraeg 2050 strategy (Welsh Government 2017) – could also develop many direct benefits, as well as indirect benefits that could help learners in Wales throughout their lives and their careers. If the changes needed in the skills system in Wales are to meet the challenges and opportunities we have outlined, it is absolutely crucial that the skills system further develops its ability to meet the needs of all of Wales, in a way that retains a strong link to Wales' distinct culture and heritage.

3. POLICY CHANGES ON SKILLS IN WALES

Our first report highlighted several policy initiatives in Wales in relation to the skills system. Many of these show potential for developing a 21st century skills system.

For example, the establishment of a Future Generations Commissioner through the Wellbeing of Future Generations (Wales) Act 2015 offers a potentially powerful device to focus the skills system on the long term, and on the significant opportunities and challenges Wales faces. This could be a crucial element of policymaking in Wales when it comes to building a 21st century skills system.

Equally, the proposals for a new CTER, bringing sixth form colleges, colleges, apprenticeships, in-work learning and universities under the remit of one organisation offers potential to align the aims of the skills system as a whole and bring a more outcomes-based approach to funding and organising the skills system. However, the details of the CTER are unclear; it is proposed to be in place for 2023 (following the next Welsh Assembly elections), and whether the opportunities offered by structural change are taken in reality remains to be seen. There are risks that, without the correct implementation, new structures leave practice on the ground untouched.

The 2016 Diamond Review has provided a level of certainty in relation to higher education funding in Wales – not withstanding potential changes to student finance in England – which will be important as we enter this age of disruption. This review also touched on some of the key trends facing

Wales, and its proposals for reform to funding for part-time higher education and degree apprenticeships offered some responses to them. However, while protecting the flexibility offered through part-time study is positive, this is unlikely to be nearly enough to offer the flexible skills system needed, across all levels of study, as automation, ageing, Brexit and global trends take effect. Likewise, the advent of degree apprenticeships are a positive response, at least in pilot form, bringing new vocational-focused provision into higher education. However, the scale of the current pilot is small and will need to expand significantly if successful.

The Employability Plan, published in 2018, also offers some useful potential changes to in-work training in Wales, with recommendations including a pilot of personal learner accounts and the creation of the Review of Digital Innovation (both outlined later in this chapter). Its overall focus on reducing inactivity rates is also correct in the context of ageing and Brexit in particular, with the increasing need to get the most out of the remaining working-age population in Wales. However, this marks the latest in a series of strategies aimed at in-work learning in recent years and shows a relative hyperactivity from government in this policy area, particularly compared to other parts of the skills system.

The three RSPs, established in 2014, offer an opportunity to bring greater coherence to the skills system at the regional level (particularly important once new national governance arrangements through the CTER take effect). However, through our face-to-face research, we found that rather than offering an opportunity to align the aims of the system and bring learner and employer voices into decisions over skills provision, RSPs are perceived as limiting autonomy at the local level, particularly in relation to colleges, bringing Welsh government perhaps too close to operational decisions in relation to provision. The recent review of RSPs, conducted by the Welsh Assembly's Economy, Infrastructure and Skills Committee, outlines a number of recommendations and actions to reform

their role, including a new focus on demand-side interventions to boost skills demand and utilisation by employers (National Assembly of Wales 2019).

Overall, Wales has seen many positive changes in relation to skills, which could help it adapt to the challenges and opportunities it faces. Often, these changes have been along the right lines. However, they have rarely possessed the necessary scale of ambition to meet the scale of the challenges faced.

Since the publication of our first report for this project, there have been several policy developments relevant to developing a 21st century skills system in Wales.

3.1. Digital 2030

The Welsh government's new 'Digital 2030' framework for post-16 digital learning offers a new 'strategic framework' and 'shared vision' for digital learning during the next decade, and helps prioritise where resources and efforts are targeted across the government's remit. The framework sets out to ensure all relevant aspects of Wales government policy, governance and reform are brought together under 'The Digital 2030 Ecosystem' (Welsh Government 2019a), covering further education, work-based learning and adult learning.

The framework sets out the following eight aims for delivering an effective digital strategy for Wales.

1. Clear, nationally agreed standards for digital skills are in place to enable learners and staff to meet industry, private and public sector requirements, building on the digital competences developed during compulsory schooling.
2. Learning is enhanced through the use of technology, wherever it is appropriate and beneficial to the learner.
3. The coherence and accessibility of digital learning is increased through a range of curriculum delivery

methods that are appropriate to learner and employer needs, and offer learning opportunities in both the Welsh and English languages.

4. A safe and secure teaching and learning experience is enabled and managed for all learners and staff through provision of appropriate virtual and physical environments.
5. The benefits of digital technology, and possible barriers to their achievement, are understood by all staff including senior leaders.
6. Continual improvement of the learner experience and business processes is supported through effective and innovative use of digital technology.
7. A culture of collaboration ensures that information and best practice are shared to drive effective use of digital skills to support leadership, learning and business processes.
8. Staff, learning and business resources are aligned to enable efficient support of the continually evolving digital requirements of post-16 education.

Source: Welsh Government 2019a

3.2. Review of digital innovation

The final report of the Review of Digital Innovation, *Wales 4.0: Delivering Economic Transformation for a Better Future of Work* (Welsh Government 2019f) places skills at the heart of its diagnosis for the Welsh government. As part of delivering 'Wales 4.0', the report calls for a mission-oriented approach, guided by four principles known as MAPS.

1. **Mainstream** digital in everything government does to the benefit of all, and not seeing 'digital' as an isolated topic.

2. **Align** its policy and programme interventions in relation to digitalisation so that they are effectively joined up and work to common outcomes and objectives.
3. **Prioritise** those interventions which will have the greatest impact in the medium to long term in delivering Wales 4.0.
4. **Scale** the things we do best and not being afraid to scale back, or stop doing, the things that don't work.

Source: Welsh Government 2019a

The report recognises that previous economic and employability plans by the Welsh government have made large strides but that in order to adapt to the digital transformation soon to be facing Wales, there will need to be "significant investment in relevant world-class research, workplace innovation, and 'bottom up' economic change" (ibid).

IPPR was represented on the review's expert panel. The review makes a number of recommendations that we fully back in general, and explore later in this report. These include recommendations that the Welsh government should:

- set an ambitious vision for Wales 4.0 in response to the challenges and opportunities posed by the fourth industrial revolution
- introduce a Future Economy Commission reporting to Welsh ministers
- deliver curriculum reforms in post-compulsory education and training in Wales (similar to those currently being taken forward for 3–16 year-olds)
- support a number of 'multiversity' capacity-building projects aimed at breaking down institutional and social boundaries across post-compulsory education in Wales
- develop a new skills framework for Wales to achieve a better way of matching jobs to people and people to jobs

- reform the RSPs as regional enterprise partnerships (REPs), thereby shifting their existing remit to focus on demand-side interventions, which seek to increase employer capacity for quality jobs, skills and innovation
- scale-up the Wales Union Learning Fund (WULF) with a stronger focus on supporting workers at risk of automation.

Source: Welsh Government 2019f

3.3. Right To Lifelong Learning

The Progressive Agreement between the first minister and education minister in December 2018, and in particular its commitment to consider a 'right to lifelong learning' (Welsh government 2018d), has led to a number of initiatives and new policy proposals.

Following on from its Employability Plan, the Welsh government launched its 'personal learning accounts' pilot in September 2019 to provide funding for retraining in skill shortage areas (Welsh Government 2019d). The personal learning accounts will focus on over-19s earning less than £26,000 per year.

In August 2019, the Welsh government announced the new bursary for people over the age of 60 to study for a master's degree in Wales for the 2019/20 academic year (Welsh Government 2019c). The bursary would amount to £4,000 for the academic year and would operate alongside a newly announced £2,000 bursary for students of any age to study a Master's degree in Science, Technology, Engineering, Mathematics or Medicine (STEMM) subjects, and a £1,000 bursary for people studying a master's degree in Welsh.

3.4. Commission for tertiary education and research (cter)

Following the Hazelkorn Review in 2016 and subsequent reviews of Post Compulsory Education and Training (PCET) governance,

the Welsh government confirmed it would establish a new regulatory and oversight body for the governance of entire post-compulsory education system (Welsh Government 2019f).

In August 2019, it was confirmed that this body will be known as the Commission for Tertiary Education and Research (CTER), which is to be established by 2023. The body will take responsibility for further and higher education, apprenticeships, adult learning, government funded research, and schools based post-compulsory education and training (Welsh Government 2019b).

3.5. Social partnerships approach

In July 2019, the Welsh government announced that it would adopt a social partnership approach across government, bringing employee and employer representatives together with government in formal institutions to help shape government policy and funding decisions (Welsh Government 2019i). The goal will be to see businesses who adopt fair work principles given preference for public support, with an overall aim of driving improvements in the quality of work in Wales. This move is in line with the 48 recommendations of the Fair Work Commission in Wales, which the Welsh government has accepted in principle and is planning a Social Partnership Act later in this assembly term.

A social partnership approach is likely to be crucial to delivering increased productivity and sharing the benefits across the economy. As we consider the opportunities and challenges offered by automation, Brexit, climate change, demographic change and ageing and how we meet those opportunities and challenges in a way that narrows rather than widens economic inequalities, bringing employers, employees and government together to co-produce a new economic model for Wales will be crucial. The skills system is likely to have a key role in these moves, and how it can reflect and reinforce this social partnership approach across post-16 education, learning and training will be important.

3.6. Climate change emergency

Earlier this year, the Welsh government declared a climate change emergency (Welsh Government 2019n) and, following this, accepted the recommendation from the Climate Change Committee that Wales reduces carbon emissions by 95 per cent by 2050 (Welsh Government 2019o). The Welsh government has also signalled its ambition to go beyond this target to achieve a net-zero economy by 2050. This follows commitments to achieve a net-zero public sector by 2030, and 100 policies and proposals published in the Welsh government's 2017 Prosperity for All economic strategy, to meet existing carbon reduction targets for 2020 (Welsh Government 2017b).

Clearly, the transition needed to move to an economy with far lower carbon emissions, and one that has net-zero emissions by 2050, will require significant change and cause large-scale disruption. This change is clearly required; without question, we are in the midst of a climate emergency across the world (Laybourn-Langton et al 2019). This will need not only a skills system that itself is net-zero by 2030, but also one that can develop the skills, and the demand for skills, that can help to reshape the economy in Wales to a net-zero future. And it must be fit to take up the opportunities afforded in exporting that expertise and those skills to enable transition across the globe.

4. THE ATTRIBUTES OF A 21ST CENTURY SKILLS SYSTEM IN WALES

Wales will face significant opportunities and challenges over the coming years, which are likely to bring an unprecedented level and pace of disruption. To meet these challenges and opportunities, Wales will need a skills system able to prepare the economy and people for the future they face, and to help shape who wins and who loses through this intense period of change. While the Welsh government has several policy initiatives and reviews that are beginning to outline the shape of a response to these changes, too often the scale of ambition of reforms have not (yet) matched the scale of the challenges faced.

Following our analysis and research with those working in and around the skills system in Wales, this section outlines the attributes that we believe a 21st century skills system in Wales needs to have, and the recommendations that we believe could help to realise them.

The attributes of a 21st century skills system in Wales

In our view, a 21st century skills system for Wales will need the following.

- To have a clear focus on **delivering a fairer and stronger economy**, helping to manage the effects of automation and ageing. This will likely need close alignment between skills, enterprise and economic policy as well as a social partnership approach and a focus on fair work. This will give the skills system a greater role in taking the

opportunities of automation and helping to shape who wins and loses through the significant disruptions we face.

- To deliver a **lifelong learning revolution** in Wales – a focus on young will not be enough as the effects of automation, Brexit, climate change and demographic change begin to take place.
- To deliver more **modular and bite-sized learning** based on skills as much as qualifications. Flexible provision will be a key component of a skills system that works for all of Wales, all sectors and businesses in Wales, and works throughout learners' careers.
- **Flexible and responsive curricula** – where change occurs quickly in the economy and society, change needs to happen at a fast pace within the curriculum.
- To work to **unlock demand for skills among employers and employees**. Wales needs to avoid the risk of a 'low-skill equilibrium' – where low demand for skills among employers leads to low demand for skills from employees (and vice versa) – to get the most out of the remaining working-age population.
- The right balance between **autonomy and accountability** to give space to providers within an overall policy strategy. Wales should adopt the principle of 'supported autonomy' as a key organising principle for the skills system.

A 21st century skills system will need to have a clear focus on delivering a fairer and stronger economy, which will help to manage the effects of automation and ageing, alongside a commitment to education, learning and training as a public good. This will likely need close alignment between skills, enterprise and economic policy, a social partnership approach and a focus on fair work.

As outlined in our first report, we have seen big improvements in inactivity rates and increases in the employment rate in Wales over the last few years. This has significantly closed the

gap in employment and inactivity rates between Wales and the UK average, after decades of underperformance on these measures (Fawcett and Gunson 2019).

The quality of work in Wales is a mixed picture. Over the last 14 years, Wales has seen strong growth in high-skilled work. However, this has been accompanied by an increase in low-skilled work and significant reductions in mid-skilled roles. There have been similar trends in regions in England that neighbour Wales (ibid).

At the same time, pay levels in Wales are lower than the UK average (the second lowest area of any nation or region in the UK) with some of the highest levels of low pay in the UK – 27 per cent of workers in Wales are paid less than the real living wage. Productivity rates (measured as GVA per hour worked) are the lowest of any nation in the UK, and all regions in Wales have lower productivity rates than the UK average level (ibid).

At the same time, we are beginning to see a potentially worrying trend in relation to increasing rates of zero-hours contracts within Wales. Table 4.1 shows that the rate of zero-hours contracts in Wales increased to 3.4 per cent in 2019 – higher than any other UK nation, and all English regions bar the Midlands.

Table 4.1: Proportion of workers in zero-hours contract employment by nation of the uk

	In employment on a zero-hours contract (thousands)		Percentage of people in employment on a zero-hours contract (%)	
	2018	2019	2018	2019
Wales	37	50	2.5	3.4
England	671	760	2.5	2.7
Scotland	64	70	2.4	2.6
UK	781	896	2.4	2.7

Source: Adapted from ONS 2019

Note: No reliable estimates are available for Northern Ireland

Proposals to establish the CTER in 2023 bring significant opportunities to align aims and desired outcomes across the post-16 system in Wales (Welsh Government 2019b). Improving job quality and, through that, driving up rates of productivity, pay and career progression should be a common aim.

The recent Review on Digital Innovation recommended that the three existing regional skills partnerships in Wales should move to become regional enterprise partnerships, in order to broaden their focus to include demand-side aspects of the economy. This is recommended to include working with employers to increase investment in and demand for skills, and to improve how the skills of workers are used (including through job design) and influencing business practices and models (Welsh Government 2019f). We fully back this recommendation. The Welsh government needs to consider all the levers at its disposal to encourage employers to adopt longer-term business models and improve the quality of work in Wales, building on the Fair Work Commission and proposals for a Social Partnership Act before 2021 (Fair Work Commission 2019; Welsh Government 2019i).

Recommendation 1: the welsh government should set clear guidance that a key priority for the skills system as a whole is to support the delivery of a fairer and stronger Wales

The creation of the CTER offers a new opportunity to align the whole of post-16 education and training in delivering the common aim of a fairer Wales and a stronger economy in Wales. In particular, there is a clear need to change the economic model in Wales to prepare for and respond to the significant opportunities and challenges facing Wales and to narrow existing inequalities.

The Welsh government should set a clear national mission for the new CTER to ensure the skills system is explicitly tasked with helping to shape a fairer Wales and a stronger

economy in Wales, alongside a commitment to education, training and learning as a public good. This mission should be translated by the CTER into national ambitions, which may include ambitions around, for example: managing automation, driving increased productivity, narrowing economic and social inequalities, and enabling fairer work. These national ambitions could then be translated into region-specific, tailored targets and activity, and local provider-level targets and activity.

This will see the skills system take on a clear role in influencing and shaping the predominant economic model in Wales, and bring it more clearly into enterprise and economic development policy areas, alongside education, skills and social justice. This is in line with recommendations from the Review of Digital Innovation, and the recent Welsh Assembly Committee report into RSPs, to explicitly task the skills system with demand-side interventions, in order to boost employer demand for skills as much as supply-side interventions to boost skill levels across the population in Wales.

Alongside a general need to improve job quality in Wales and deliver a fairer and stronger economy, there is a specific need to improve outcomes for young people in Wales. For 2015/16 (the latest year of available statistics) 81 per cent of post-16 leavers went on to employment or additional education. Of post-16 leavers that year, 13 per cent entered a new education course at the same level as the one they just completed, which is classed as a positive destination. While some learners may be broadening their learning, or undertaking learning in a new subject area, for others it may show that a number of young people in Wales are not being helped to progress their learning or their careers (Welsh Government 2018c).

At the same, youth unemployment is higher in Wales than the UK as a whole, standing at 14.2 per cent of the 16–24-year-old workforce for the year ending March 2019. This represented an increase of 2 per cent (or 0.6 percentage points) on the previous year (Welsh Government 2019j). At the same time, the level of young people not in education employment or training (NEET) has plateaued. For 16–18-year-olds, the proportion of people who are NEET rose to 10.7 per cent for 2018 – up from 9.4 per cent in the previous year. For 19–24-year-olds, the NEET rate was 16.1 per cent for 2018 – a similar proportion to the previous year (Welsh Government 2019k).

While NEET and youth unemployment figures are increasing in Wales, it is important to look also at the quality of work for young people. We looked at the proportion of young workers in Wales in insecure work – defined as those in zero-hours contract employment, low-paid self-employment, and temporary work (excluding fixed term contracts). Table 4.2 shows that the proportion of young workers (aged 16–24) in Wales in insecure work is lower than the UK average. However, it still represents just under one in every six young workers. It also, perhaps as expected, represents a higher rate for young workers than the proportion of older workers in insecure work.

Table 4.2: Proportion of workers in insecure work in the uk, by age and by area

	16 to 24 year-olds		Over-25s	
	Number	Proportion of total employment	Number	Proportion of total employment
Wales	35,000	17.1%	143,000	11.0%
Scotland	58,000	17.1%	203,000	8.7%
Northern Ireland	23,000	23.6%	83,000	11.2%
UK	690,000	17.9%	3,150,000	11.0%

Source: Analysis is based on the Labour Force Survey (various most recent quarters) and the Family Resources Survey (2017/18); ONS 2018 and 2019c

Note: We define insecure work as the respondent being in temporary employment in their main job, excluding fixed-term contracts; having a zero-hours contract; or 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 have been made to remove double counting. Numbers are rounded to the nearest 1,000.

Wales, and the UK as a whole, was rightly alive to the potential scarring effects of youth unemployment following the 2007/08 financial crash with a number of policy initiatives following with an aim of reducing or preventing youth unemployment.

However, there is a risk that policymakers across the UK have not been alive enough to the potential scarring effects of poor-quality work for young people. Looking ahead, Wales' ageing population is likely to make it even more important that Wales is able to improve outcomes for young people in order to get the most out of the remaining working-age population.

In England, a new school leaving age of 18 was introduced in 2014. While the changes did not come with enforcement measures, there is some initial evidence that it has improved outcomes for young people. While there is only data for a small number of cohorts there is some evidence that even this 'soft' increase in the leaving age has resulted in improvements to NEET figures in England, dropping to 20-year lows in the year immediately after introduction, and maintaining these in subsequent years (Department for Education 2015).

Recommendation 2 : the welsh government should replace the existing school leaving age of 16 with a new 'skills participation age' of 18

Introducing a skills participation age of 18 would mean that all children in Wales would need to be in a job with training, or in education, learning whether in the workplace or the classroom. The aim of this change would be to ensure that every child in Wales, whether in a job or continuing in education, would receive high-quality learning through to adulthood, ensuring if they leave the

skills system it is for a high-quality job with training or an apprenticeship. This is in line with our recommendations for the Northern Ireland and Scotland skills systems.

A 21st century skills system will need to deliver a lifelong learning revolution in Wales – a focus on young people will not be enough.

The Welsh government, as part of the progressive agreement between education minister Kirsty Williams and the new first minister Mark Drakeford, agreed to explore how a right to lifelong learning could be implemented in Wales (Welsh Government 2018d). Following this, we have seen a number of reforms, including the piloting of personal learning accounts for lower-paid workers over the age of 19 to gain skills in sectors with skills shortages (Welsh Government 2019d).

It is right that the Welsh government is focussing on a right to lifelong learning. The ability to reskill and upskill throughout their careers will be crucial if Wales' workforce is going to be prepared for the disruption that automation and ageing will bring. The skills system will need to stand beside learners and workers throughout their career, help people to gain skills that match demand and employers to better use workers' skills, and develop the resilience and adaptability required to meet the challenges of a shifting economy.

There are other European countries that invest in high levels of 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 (with a comparable rate of just 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). At the same time, investment in adult education in Singapore has been a significant priority in recent years, with large expansion in adult

skills participation rates, reaching over 20 per cent for both 20–29-year-olds and 30–39-year-olds (Department of Statistics Singapore 2018).

More broadly, amongst 25 to 64 year olds we see similar themes, with high rates of participation in formal education or training in Denmark (at 13.5 per cent), Finland (14.2 per cent) and Sweden (13.8 per cent). In Wales, the adult participation rate for the same age group is considerably lower, with 10.7 per cent of 25 to 64 year olds in formal education or training. To match Finland's performance, Wales would need to see over 28,000 more 25 to 64 year olds engaged in formal education or training.

Recommendation 3: the welsh government should set a clear target to match some of the highest rates of adult skills participation in the world by 2025, bringing 30,000 more learners over-25 into the skills system.

Bringing Wales' participation rate up to among the highest in Europe would need an addition of just under 30,000 adult learners (those over 25 years old) in the skills system, whether through in-work learning or otherwise, at an estimated cost of £60 million per year.¹ This should be provided through a tertiary education and training fund, blind to provider, with funding following the greatest impact. Key aims from the fund would be increasing job quality, boosting pay, productivity and career progression in low-paid sectors, and crowding-in employer investment in skills (including from small and medium-sized enterprises (SMEs) and micro-employers). It will be crucial to ensure that funding is spent on recognised learning but delivered in a bite-sized and flexible way, with a curriculum that is constantly updated.

1 Assuming a figure of 15,000 full-time equivalent (FTE) students at a cost of £4,000 per FTE based on the cost per FTE for college teaching in Scotland of £4,000.97 (SFC 2019).

By increasing the proportion of over 25s in education and training in Wales we can best prepare for automation and best take the opportunities that will come through automation in a way that narrows inequalities rather than widens them.

A lifelong learning revolution will be expensive, and will require additional investment from both public and private sources. It is therefore incredibly important that the skills system in Wales sees EU funding fully replaced following the UK's departure from the EU. While details of the UK government's proposed Shared Prosperity Fund are still vague, certainty is required for the skills system to make the long-term reforms needed to prepare Wales for some of the key challenges it faces, including managing automation, ageing and meeting targets on reaching net-zero carbon emissions by 2050.

Recommendation 4: the uk government should guarantee full replacement of eu funding for skills in Wales following the uk's departure from the eu

Cuts in funding for skills, stemming from the UK's decision to leave the EU, would come at an incredibly damaging time for the skills system in Wales. We are at the point of needing to make the long-term decisions that will create a durable 21st century skills system, ready to help Wales meet the challenges and opportunities ahead. The UK government should offer a clear guarantee that funding levels will be protected following the UK's departure from the EU.

A lifelong learning revolution will be required to work with learners throughout their careers and enable them to upskill and reskill as the labour market changes. Another key aim, particularly as Wales' population ages, should be to capture the skills and experience older workers have as they reach

retirement age, and find new ways for those skills and that experience to be passed on to younger generations. Rather than careers cutting off at retirement, we should find ways for workers approaching retirement age to wind down their careers and pass on their experience.

Recommendation 5: the welsh government should pilot a new 'master apprentice' programme aimed at providing routes for older workers to pass on experience to younger generations

A new wide-ranging master apprentice programme would enable older people to formalise their experience and learn how to pass the skills they have amassed throughout their careers on to younger workers in apprenticeships or in-work training through mentoring, peer-support and placements. Master apprentices would be fully integrated into the apprenticeship system, and any new skills framework in Wales, to enable older workers to pass on skills and experience to younger apprentices and workers. This would build on the current master craftsperson apprenticeship framework being piloted in Engineering in Wales.

A 21st century skills system will need to deliver more modular and bite-sized learning based on skills as much as qualifications. Flexible provision will be key.

Currently, SMEs and micro businesses in Wales are much less likely to invest in skills than larger businesses. In 2017 (the latest year of available statistics) only 22 per cent of employers of two to four staff, 42 per cent of five to 24 staff members, and 65 per cent of employers with 25 to 49 employees had a training budget for the coming year. Similar proportions of micro and small employers as larger employers report not fully utilising skills within their workforce, but fewer SMEs report skills gaps than larger employers (Fawcett and Gunson 2019). This is a pattern seen across the UK, where skills investment

has at best stalled since 2011, and where workers for smaller businesses see less access to investment in skills than those working for larger businesses. In addition, as we have already outlined, the participation rate of over-25s in Wales is lower than a number of our international competitors.

As automation causes significant changes to the world of work, and Brexit, climate change and ageing bring their own disruptions, unlocking skills investment and engagement among older workers and smaller businesses will be crucial to Wales' future.

One of the key ways to do this will be to provide more flexible forms of learning. Bite-sized, modular-based learning could open up much greater levels of flexibility for employee and employer alike, allowing slow learning alongside work, all the way through to intense bursts of learning on short release from work or in-between job roles.

Through the Diamond Review, the Welsh government implemented some reforms that have helped to see rates of part-time study within higher education recover from the significant decreases seen following tuition fee increases in 2012 (Diamond 2016). A further recommendation from the Diamond Review was to introduce degree apprenticeships which have now been introduced in Wales, albeit for small numbers of students in a small number of subject areas. However, neither existing part-time higher education provision nor degree apprenticeships will likely provide the flexible provision required to prepare for the future and open the skills system up to wider parts of the economy, and to greater numbers of older learners.

There is a need to open-up more flexible, bite-sized forms of provision across the skills system, and, as the need for reskilling and upskilling increases, provision focussed on older learners, those over 25 years old, and those in work. This is likely to mean a focus as much on skills as on qualifications, and a move towards the development of clear capabilities and the completion of specific modules as the key currencies of the skills system, rather than a single-minded focus on qualifications.

The recent Review of Digital Innovation made several interesting recommendations in this sphere, including proposals for a skills framework to help to match people to jobs and jobs to people (and indeed to encourage job redesign from employers) (Welsh government 2019f). We fully support this recommendation, which is in line with similar recommendations around providing greater routes for job brokerage that we have made for the Scotland and Northern Ireland skills systems (Callander et al 2018).

The review also notes the recent contribution from Andy Haldane, the chief economist at the Bank of England, in relation to the need for universities – and post-16 providers more generally – to broaden their role and forms of provision, focussing on widening access, blending vocational and academic learning, and taking a greater role in economic development – moving from universities to what he dubs ‘multiversities’. The review recommends a number of pilots to build ‘multiversity’ capacity in Wales.

The Open University, which operates across the UK and has a significant presence in Wales, offers a model which allows open learning, with a mix of online and face-to-face provision, and the ability for learners to choose their learning module by module. Building on this model to provide a similarly open model of learning within further education and in-work provision could open the skills system up to greater numbers of employers and learners. For Wales specifically, it could also provide further opportunities for Welsh language study and extend the reach of the skills system into every part of Wales, whether rural or urban.

Recommendation 6: the welsh government should pilot an open institute of technology

An Open Institute of Technology (OIT) would bring together existing colleges, universities and training

providers in a one-stop-shop that would provide flexible, bite-sized and blended vocational and academic learning, with a mix between face-to-face and online provision. The OIT would be aimed at learners over 25 years old and in lower-paid work. Provision would be module-based, allowing learners and employers to tailor learning to their joint needs, and providing 'open' learning. This could form part of any 'multiversity' capacity building projects proposed by the Review into Digital Innovation.

Crucially, an OIT, with its mix of online and face-to-face provision, could bring the skills system to every part of Wales, and help meet the needs of rural parts of Wales as much as urban. This would be funded through an expansion in lifelong learning provision, to bring adult participation rates in Wales up to among the highest in the world, as outlined in recommendation 3.

A 21st century skills system will need 21st century curricula – where change occurs in the economy and society, change needs to happen in the curriculum just as quickly.

The Welsh government is currently implementing significant reforms to the school curriculum. The new curriculum, which is being rolled out from 2022, will see a new emphasis on equipping pupils for life, with a focus as much on skills and life-long learning capabilities as on knowledge and testing. A key focus of the new curriculum for Wales will be on digital competence (Welsh Government 2019l).

The recent Review of Digital Innovation has gone further, recommending curriculum reforms for post-16 education and training in line with reforms to the school curriculum (Welsh Government 2019f). We back this recommendation, in line with our own recommendations for Scotland and Northern Ireland (Callander et al 2018) and in line with calls from other organisations such as the Learning and Work Institute Cymru (Hagendyk 2019).

When undertaking curricula reform for post-16 education in Wales, we believe the focus should be on developing a base of open and modular learning routes across post-16 education, encouraging fully flexible provision. Priority should be placed on learning the broad capabilities and attributes required to successfully navigate the likely change and disruption facing Wales' economy in the future.

These same life skills are those that employers currently report as being key to skills shortages in Wales (Fawcett and Gunson 2019). For teaching technical and specialist knowledge, crucially, new mechanisms should be put in place to gain strong employer and learner engagement into curriculum content, to enable the fast-paced refreshing of course content and to ensure course content is constantly updated.

Recommendation 7: the Welsh government should work with key partners to undertake reform of curricula across post-16 education and training

To be ready for the key trends and changes facing Wales, we need new post-16 curricula focussed on both the Wales of now and the Wales of the future. Wales should aim to develop open, modular and flexible post-16 curricula, across FE, HE and in-work provision, based on developing the broad capabilities and attributes needed for lifelong learners, as well as narrower, and constantly updated, specialist knowledge. Employer and learner engagement will need to be strengthened to ensure course content is relevant and fully up to date, and Welsh language provision should be a key component of the new curriculum.

A 21st century skills system will work to unlock demand for skills among employers and employees. Wales needs to avoid the risk of a low-skill equilibrium – with low skills demand from employers leading to low skills demand from workers (and vice versa).

In many ways, Wales could be described as being stuck in a low skills equilibrium. When employers are unwilling to invest in and utilise skills among their workforce, employees are less likely to seek higher-level skills and engage in learning or training. At the same time, if employees are less likely to seek higher skills, employers are less likely invest in skills and utilise them. Furthermore, the cross- border nature of the Welsh economy means that investment in skills by employers may not be retained within individual businesses, or even within Wales over the long term.

One of the keys to developing a 21st century skills system in Wales will be developing a system that can encourage a virtuous cycle – in which skills investment from employers can be unlocked, skills utilisation improved, and demand for new skills among employees increased. Alongside our recommendations to place the aim of increasing job quality at the heart of the skills system at the national, regional and local levels, we believe there is more that can be done to unlock employer investment in skills through devolved powers.

Firstly, the Welsh government should consider how it can use the significant public funding that is spent through the Welsh Assembly to influence employers' business models to encourage fairer work, and create a fairer and stronger economy. The Fair Work Commission's recent report recommends that the Welsh government should adopt the 'fair work first' approach recently adopted in Scotland (Fair Work Commission 2019), in which businesses only benefit from public funding if they can provide evidence that they are a fair work employer (Scottish government 2018). In Wales, one of the key measures of whether a company is a fair work employer should be whether the employer in question has adopted fair work principles, including investing in the skills of their employees.

Recommendation 8: the welsh government should adopt a 'fair work first' approach to the skills system

This would be in line with the Fair Work Commission's own recommendations, and would follow recent moves by the Scottish government to make public funding for businesses and access to public funds through procurement contingent on whether the business in question has adopted fair work principles and standards.

As outlined in recommendation 1 reshaping Wales' economic model should be a key strategic aim of the tertiary education system in Wales. A fair work first approach could reinforce this, meaning employers need to adopt good business practices in order to benefit from skills investment or other public funding.

The Welsh government should consider how it can use its existing tax powers, and the forthcoming devolution of new tax powers, to further encourage employers to invest more in the skills of their employees. Given the well-established link between workers' skills and productivity (Rincón et al 2015), any successful use of tax levers has the opportunity to benefit of employers, learners and the wider economy.

Recommendation 9: the welsh government should review the tax levers within its responsibilities to examine how they could better unlock skills investment from business

Currently, the most obvious tax lever of relevance to the skills system within the control of the Welsh government is the business rates system. The Welsh government should review how its current and forthcoming tax powers could be

used to drive business investment in skills to help to contribute to the costs of increased skills provision. In particular, reforming existing tax allowances could be an important way to encourage tax breaks or create tax credits for skills investment.

As an example, one option could be to reform the small business rates relief scheme, worth £120 million per year in Wales (Welsh Government 2019m), to create a 'small business skills credit'. This would provide funds for small businesses to invest in the skills provision that will grow their business, boost productivity, drive the economy and potentially boost pay and career progression. This would make tax breaks and allowances for businesses contingent on increased skills demand and utilisation.

In recent years, the Welsh government has reduced investment in lower level foundation apprenticeships (level 2) in its non-priority subject areas, including business administration, customer service, retail, and hair and beauty. However, the Welsh government is willing to fund apprenticeships in non-priority areas where there is evidence of the potential for progression from level 2 to level 3 apprenticeships (Welsh government 2018e). This principle of contingency – in which public funding is provided in return for employer action on progression – is one that could be built on across the in-work learning parts of the skills system in Wales. This could help to maximise the impact delivered – in terms of pay increases, career progression and job quality – from public investment in skills in Wales.

Recommendation 10: the welsh government should pilot progression agreements within the parts of the skills system focussed on in-work provision

Progression agreements would create a formal tripartite relationship between the learner, provider and the employer in relation to in-work provision. In return for public investment, the learner would agree to meet certain learning outcomes and, if met, the employer would agree to specific forms of progression (for example, a pay rise or promotion or some other form of career progression as agreed). For those parts of the skills system focussed on in-work provision, and in particular any existing or new provision (as recommended previously) focussed on older learners aged over 25 in low-paid work, progression agreements could be a way to maximise the impact for the employer, employee and the wider economy from skills investment, and provide a key test of employer demand and likelihood of utilisation prior to allocating places and funding.

The Review of Digital Innovation states that it wishes to see employers take on a more active role in the skills system, boosting investment and utilisation of skills rather than "simply extracting capacity from existing funding for adult skills provision" (Welsh Government 2019f). The Welsh government should explore ways, including piloting progression agreements, to introduce a greater level of contingency into the parts of the skills system focussed on in-work learning. This would help to ensure the costs of the increased lifelong learning provision envisaged by this report is not solely borne by the state.

A 21st century skills system will need the right balance between autonomy and accountability to give space to providers within an

overall policy strategy. Wales should adopt the principle of supported autonomy as a key organising concept for the skills system.

The proposals to establish a new Commission for Tertiary Education and Research (CTER), bringing together the whole of post-16 education and training in Wales, could be a great step forward. The CTER offers opportunities to align the aims of the system as a whole, and to promote collaboration rather than competition between different parts of the system. In addition, the three existing regional skills partnerships (RSPs) offer opportunities, in this new context, to develop a regional coherence aligned to this new national body and to new national aims, with tailored regional targets and activity based on the specific context in each area.

In our research, we picked up some consistent themes. These included the need to improve learner and employer engagement at the classroom, local, regional and national levels. They also included the perception that Welsh government was too close in operational terms to parts of the skills system and too distant from others. And, while there is a clear strategic direction for parts of the system, this is absent for other parts.

To be ready to respond to the significant changes that are and will take place within the Welsh economy, a better balance will need to be found between accountability and autonomy across the system, with a clear unifying tertiary education and training strategy put in place, which can be cascaded across and throughout the system. In addition, greater levels of engagement with learners and employers need to be developed throughout the system, particularly if the flexible, tailored and constantly updated curricula that we have already recommended is to be realised. Moving to an outcomes-based approach for the skills system could allow a better balance between autonomy and accountability across the system, and provide new ways for employers and learners to engage meaningfully to shape the system.

Recommendation 11: the welsh government should introduce outcome-based agreements across the post-16 system in Wales between national, regional and local levels

Outcome-based agreements could offer an opportunity to balance the accountability needed for public funding, with the autonomy required by providers to make operational decisions, in partnership with learners and employers. These would see medium-term priorities and clear desired national outcomes for the skills system set by government and translated to the regional context through RSPs. In return for public funding (including the government-backed student loans that underpin the tuition fees system) providers would agree targets and activity to deliver against these outcomes, but with the autonomy required to respond to demand and to the needs of employers and learners. Crucially, moving to this outcome-based approach could offer an opportunity to break down administrative and funding silos that may get in the way of meeting the needs of students and employers.

The introduction of the CTER offers an opportunity to move to an outcomes-based approach across post-16 education and training in Wales, setting clear national outcomes that can be tailored to regional and provider-level action, promoting collaboration rather than competition, and bringing national and regional coherence to the system.

The new governance arrangements covering the whole of post-16 education and training in Wales must offer new opportunities for students and learners, as well as employers, to shape the skills system in Wales. With the creation of the CTER, there is potential for new approaches to how the skills system is funded and for much more flexible and responsive curricula. To embrace these opportunities, we will need to see significant increases in learner and employer engagement. By placing

learners at the heart of the new unified post-16 education and training system in Wales, it will be possible to deliver a 21st century skills system best able to adapt to the challenges and opportunities it faces over the coming years.

Recommendation 12: the welsh government, its agencies and the post-16 education system should undertake a review of learner and Employer engagement

The Welsh government should undertake a review of learner and employer engagement, timed to introduce new routes for engagement at the classroom, provider, regional and national levels. Only by placing learners at the heart of the skill system, and only by providing new routes for learners and employers to shape the skills system will it be possible to create the adaptable and resilient learners required over the rest of the 21st century. This review should include the right balance of representatives at the national level, at the regional level through RSPs, and on the governing bodies of individual institutions, including staff, learners and employers. It should also consider ways to ensure employer engagement can take a long-term and area/sector-wide view rather than solely representing individual and short-term employer interests.

5. CONCLUSIONS

Wales, like the UK as a whole and the wider world, will face significant levels of change over the coming years. The pace and scale of this change is likely to increase as we see the effects of automation and technological change, Brexit, climate change, demographic change and ageing bring disruption across the economy and society for the foreseeable future.

The skills system cannot single-handedly prepare Wales for the opportunities and challenges faced ahead. 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 Wales will see over the coming years.

The need for upskilling and reskilling will increase as the world of work changes. The need to address economic weaknesses, will become even more important as the population ages significantly. Brexit, while almost impossible to predict at this stage, could threaten funding for skills in Wales given current levels of EU funding for skills in Wales, at the same time as we see increased demand for skills as immigration from the EU decreases. Climate change and the changing nature of globalisation will require a hugely significant transition in the economy in Wales over the coming decades if we are to meet net-zero targets for 2050. Where significant change occurs, new risks of inequalities develop, and new opportunities for fundamental change are presented.

A 21st century skills system will be one that helps to shape the effects of these changes and determine who wins and who loses, addressing existing inequalities and minimising future ones.

If Wales is to develop a successful 21st century skills system, the scale of the challenges and opportunities faced over the coming years needs to be met with a similar scale of ambition. By taking the opportunities offered by forthcoming reforms within the skills system, and building on some of the existing strategies already in place, Wales can build a 21st century skills system that can prepare all of Wales for the significant change it faces, and ready the people and economy of Wales to take the opportunities posed by the age of disruption we have already entered.

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