



A 21st CENTURY SKILLS SYSTEM FOR WALES

Challenges and Opportunities

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JULY 2019

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CONTENTS

Foreword	7
Summary	9
1. Introduction	13
2. Recent policy changes in post-16 education, learning and training in Wales	15
2.1 Cross-cutting policy context and goernancec changes	15
2.2 Apprenticeships and training policy context	20
2.3 Colleges in Wales	23
2.4 Universities in Wales	24
2.5 Business and employer training	26
2.6 Learner engagement	27
2.7 The role of the Welsh government	28
3. The economy of Wales	29
3.1 The shape of Wales' economy	29
3.2 Productivity	32
3.3 Pay	32
3.4 Career progression	33
3.5 Poverty	34
3.6 Employment	34
3.7 Economic inactivity	36
3.8 NEET	37
3.9 Low and no qualifications	37

3.10 Skills-related vacancies, skills gaps and under-utilisation 37

4. Where is the skills system going in Wales? 40

4.1 Automation and a changing technological lanscape 40

4.2 An older Wales 44

4.3 Brexit uncertainty 46

4.4 The changing nature of globalisation 48

5. Key challenges and opportunities for the skills sytems in Wales 49

References 52

FOREWORD

The Further Education Trust for Leadership (FETL) is pleased to publish this IPPR report, which examines the challenges and opportunities that Wales will face in the years to come and asks how skills can help the country respond, building a stronger, more inclusive and prosperous Wales for the 21st century. It follows a previous IPPR report, also supported by FETL, which considered what a 21st century skills system would look like in Scotland and Northern Ireland.

Some of the challenges facing Wales are shared by other countries in the UK and, indeed, by other industrialised countries. Technological and demographic change point to a need for a greater focus on skills development, particularly for adults, who, increasingly, will have to retrain and upskill in order to remain effective in the labour market. These trends are likely to be exacerbated by Brexit, which will increase our reliance on the cultivation of homegrown skills and talent, indicating a greater need not only for skills development but also for more investment, particularly in further education.

Wales also faces a number of distinctive challenges, associated with the decline of major manufacturing industries, notably steel and car production, entrenched economic inequality in some areas, and the distinctive pace and character of the country's ongoing programme of post-16 reform. The purpose of this report is to review not only these challenges, but also the opportunities for Wales, grounding these insights in a careful survey of recent developments and established trends.

The report, importantly, takes a holistic view of the post-16 skills system in Wales, encompassing not only colleges and independent training providers, but also schools and higher education. This is in tune with the drift of policy in Wales, which seems to be moving towards the idea of an overarching vision for post-compulsory education, in line too with the recommendations of the Augar report in England.

This approach is welcome, and I hope it will be fully embraced by the sector, as well as by the Welsh Government. As I have argued elsewhere, it is critical that we think widely and holistically about how educational resources are distributed, and treat no part of the sector as off limits.

This IPPR report is the first of two that will consider what the 21st century skills system for Wales will look like. It aims to stimulate further thought and discussion about the challenges and opportunities for Wales, with a view to mapping out a vision for skills in the country that is equal to them. I hope it will be widely read and debated, and will stimulate further research to help ensure Wales has the skills system it needs.

Dame Ruth Silver is President of the Further Education trust for Leadership

SUMMARY

Wales is at the centre of a number of significant disruptions likely to bring long-term changes for its people and economy. Some of these are global in nature, such as automation and technological change. Some affect the whole UK – most obviously, the uncertainty around Brexit. Others come from within Wales, such as the rapid increases in its older population, which we will see expand over the coming years.

Automation is likely to have a significant impact on Wales over the coming years. Looking at those roles with the *highest* potential for automation, we find that 6.5 per cent of jobs in Wales, or 130,000 roles, have among the highest potential for automation – a rate higher than the UK average (6.2 per cent).

Equally, the effects of automation are not likely to be felt evenly. A higher proportion of women than men are in the roles with the highest potential for automation. Whereas women make up 48 per cent of workers in Wales, just under two-thirds (65.1 per cent) of the jobs at the highest risk of automation in Wales are performed by women.

For the people and economy of Wales to be ready for these very 21st century changes, we will need to see a 21st century skills system¹ ready to equip Wales for the future.

A focus on young people will not be enough. 81.5 per cent of the workforce of 2030 in Wales, and 60.8 per cent of the workforce of 2040, have already left compulsory education. The response to automation will need to meet the skills needs of people of all ages.

This report also outlines the economic and policy context facing Wales, and attempts to set out some of the key challenges and opportunities to build a successful 21st century skills system. Almost without exception, the key solutions to meeting these challenges and opportunities rely on

¹ Here, the term 'skills system' is used to describe the full range of 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.

developing a skills system that can prepare people and employers for the future, and be ready to respond when significant and rapid change takes place. If Wales is to shape the impacts of these disruptions it will need a skills system ready to do so.

A number of positive attempts from decision-makers in Wales, including the Welsh government and Welsh assembly, aim to tackle some of these changes. Firstly, there have been a number of policy reviews in Wales in recent years that have begun to set out a new policy direction, for at least some parts of the skills system. Recent reviews around apprenticeships, employability, governance across the post-compulsory education sector, and for higher education funding and student finance have attracted a great deal of support and set out new directions for the system as a whole. Equally, college mergers in particular seem to have provided for a stronger college sector than would otherwise have been the case. In addition, a number of reviews have considered the future for Wales' economy, particularly in the light of automation and technological change.

However, while there has been a great deal of policy attention in some areas – particularly in-work learning policy and higher education funding and governance – there has been less attention in other areas. Given the cross-border nature of Wales' skills system – particularly its higher education sector – policy changes in England are likely to lead to significant knock-on effects in Wales, and potentially vice versa. We have seen this with the trebling of tuition fees in 2012/13, the introduction of the UK-wide apprenticeship levy, and may see this again following the Auger Review of Post-18 education in England.

To prepare for these 21st century challenges and opportunities, we will need to see action beyond government alone. The economy in Wales is dominated by smaller employers, who are currently less likely to invest in developing the skills of their workforce than larger employers. Equally, across all employers in Wales, the overall number of days of training provided has been falling in recent years. In many ways, Wales has a cross-border economy, so attempts to use the skills system to shape its economy will need to be mindful of potential cross-border implications and interactions.

Wales goes into these changes with longstanding economic weaknesses – alongside some more recent positive news. Its economy performs below the UK average on a number of measures. Levels of pay and productivity growth, in particular, are far below many parts of the UK. Manufacturing has decreased in importance in Wales, as it has across the UK, dropping from 18 per cent to 10 per cent of all jobs in Wales (compared to a decrease across the UK from 14.7 per cent to 7.7 per cent) between 1998 and 2018.

With that said, Wales has performed well over the last 20 years in increasing the proportion of high-skilled jobs in the country, with a 25-percentage point increase in the proportion of all jobs classed as high-skilled between 1998 and 2018. There are fewer mid-skilled roles, leading to questions over risks for reduced career progression. There have also been the beginnings of very positive trends on employment and economic inactivity rates in Wales, closing towards the UK average following decades of sustained underperformance in Wales. While these positives have occurred recently, and we should be cautious about pronouncing a trend, it shows that some of the objectives for improving the economy in Wales are possible and achievable.

This report marks the first of two for this project on Wales, and follows our previous reports on the skills systems in Scotland and Northern Ireland, each of which along with this one have been funded by the Further Education Trust for Leadership (FETL). The two projects are being undertaken from spring through to autumn 2019 with further impact work following publication. As a whole, the project aims to look at how to build a 21st century skills system in Wales, starting through this first report with a focus on the challenges and opportunities facing the skills system in Wales, before moving on to look at what needs to change and what needs to stay the same to prepare the skills system in Wales for the future. We have been able to undertake desk-based research, and face-to-face research with several key contacts in Wales working within and with the skills system.

Through this work we have identified ten key challenges and opportunities facing the skills system in Wales as we move onto our next phase of the project.

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 Wales' 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.

1. INTRODUCTION

The Welsh government and Welsh assembly face a series of challenges and opportunities both now and over the coming years, that could define the future for Wales over the rest of the 21st century. Central to this is how to help people in Wales prepare, alongside employers and the wider economy, for a series of large disruptions which are likely to bring significant change over the long term. How the skills system can be further developed so it is to be ready to address the challenges Wales faces now – and be ready to meet the opportunities and challenges over future years – will be a crucial aspect of managing these changes in a way that delivers the Wales we wish to see in the future.

Each of the major trends and disruptions facing Wales has a skills dimension. Brexit remains paramount in the minds of decision-makers across the UK and uncertainty is casting a shadow over government planning. However, there are hugely important changes that are a certainty and planning for these can and should begin now.

Automation and technological change will have huge implications for Wales, as well as the UK as a whole. Ageing will begin to bring significant changes in Wales, accelerating over this decade and going forward. While Brexit brings uncertainty, it is possible to plan on the basis that immigration levels will likely be lower in the future than they have been in the past. Furthermore, no reminder is needed that the changing nature of globalisation is impacting on Wales' economy, starting with manufacturing (including the steel and car manufacturing industries) and potentially reaching service sectors in a way not seen to date. Add into this mix a Wales that enters this significant period of disruption with some clear economic weaknesses (and some strengths too), and it's clear that a deliberate and strategic approach is required to shape the impacts these changes will bring.

The skills system could be at the centre of responding to these changes. Crucial to success is ensuring that the population and economy in Wales are ready for these changes. Employees and employers both need the capabilities to get through these disruptions in a way that provides for a stronger, more resilient Wales.

This project as a whole aims to understand what a 21st century skills system would look like in Wales, building on our previous work in Northern Ireland and Scotland. Over the course of the project we want to understand the challenges and opportunities facing the skills system in Wales, from the point of view of the skills system itself. We also want to gain an insight into what success would look like in the context in which the system operates in Wales. Finally, we will complete the project by recommending what works and what needs to change to develop a successful 21st century skills system in Wales.

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. Our focus is across the full range of the skills system, but in particular the post-school sub-degree level. However, all parts of the system interact, and changes in one will likely lead to knock-on effects for others.

Our work for this report included desk-based research, the establishment of a steering group, and a set of interviews with key stakeholders from Wales' skills system.² This is the first of two reports. It focuses 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. Our second report will then look at 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 We conducted a series of eight interviews with key stakeholders from across the skills system in Wales, held a research event in April 2019, and carried out desk-based research including a review of relevant literature, a grey literature review and data collection and analysis across a range of topics relevant to the project.

2. RECENT POLICY CHANGES IN POST-16 EDUCATION, LEARNING AND TRAINING IN WALES

The post-16 education system in Wales has undergone a number of changes and reforms over the last few years. This section outlines some of the policy changes and wider policymaking context within which skills policy sits.

2.1. CROSS-CUTTING POLICY CONTEXT AND GOVERNANCE CHANGES

Political context

Following the 2016 Welsh assembly elections, a Welsh Labour-led government was formed with a Welsh Liberal Democrat assembly member (AM), Kirsty Williams, appointed as cabinet secretary for education. The education portfolio includes further education (FE) and higher education (HE), alongside schools, but does not include apprenticeships, in-work learning and other parts of the skills system.

Following the appointment of a new first minister for Wales, Mark Drakeford AM, a new agreement was outlined between Welsh Labour and the Welsh Liberal Democrats (Welsh government 2018b) in December 2018. Among other things, it set out a clear direction for parts of the skills system in Wales. One of the key elements of the agreement was a new 'right to lifelong learning'. It remains to be seen what this will mean in practice but it echoes some of the recommendations from the Hazelkorn Review (see below), emphasising the need for a lifelong learning provision in order to accommodate

the changing nature of work following the decline of heavy industry, swathes of manufacturing and the loss of 'jobs for life' (Hazelkorn 2016).

The next Welsh assembly elections take place in May 2021.

Cross-cutting skills policy and funding

In 2019/20 the skills system received more than £700 million in public funding through the Welsh government and its agencies. This amounted to £425 million for FE, £88.9 million for work-based learning, £56.2 million for employability and skills, and £141 million³ in teaching grants for HE in Wales (alongside significant tuition fee income).

In recent years there has been a policy focus on bringing the skills system together Wales-wide. In 2016, the Hazelkorn Review was published. The review, led by Professor Ellen Hazelkorn, considered the governance arrangements for post-compulsory education, learning and training in Wales (Hazelkorn 2016). Following a number of reviews and policy statements across HE, FE and skills and learning more broadly, there was a recognition of the need to review whether the pre-existing mix of governance arrangements – with responsibility split between Welsh government and a range of government-sponsored bodies – was right, especially given changes across the UK.

The review outlined six key recommendations (ibid).

1. Develop an overarching vision for the post-compulsory education system for Wales based on stronger links between education policy, providers and provision, and social and economic goals.
2. Establish a single new authority – a tertiary education authority (TEA) – as the single regulatory, oversight and coordinating authority for the post-compulsory sector.
3. Place the needs of learners at the centre of the educational system, by establishing clear and flexible learning and career pathways.

³ This is expected to rise to £170 million per year by 2021/22 as recent reforms to HE funding in Wales work their way through the student cohort.

4. Civic engagement should be embedded as a core mission and become an institution-wide commitment for all post-compulsory institutions.
5. Create a better balance between supply-led and demand-led education and research provision shifting away from a market-demand driven system to a mix of regulation and competition-based funding.
6. Create the appropriate policies, processes and practices to encourage better long-term and joined-up thinking about the educational needs and requirements for Wales, now and into the future.

In response to the vision set out by the Hazelkorn Review, the Welsh government published a white paper in June 2017 entitled *Public good and a prosperous Wales – Building a reformed PCET system* (Welsh government 2017a). The white paper included initial proposals for the TEA, named the Tertiary Education and Research Commission for Wales (TERCW), which would be responsible for HE and FE, work-based learning and adult learning (Welsh government 2018a). The Welsh government undertook a consultation on the next steps for TERCW and the broader Hazelkorn recommendations in late 2018 (Welsh government 2018e).

In addition, the *Employability plan for Wales* published in 2018, provided a new cross-cutting strategy aimed at reducing unemployment, inactivity and rates of those not in education, employment or training (NEET) in Wales (Welsh government 2018c). The plan sees the creation of a new Employment Advice Gateway aimed at brokering opportunities between learners and employers, and a new employability service called Working Wales. The plan aims to see inactivity rates reduce to no more than the UK average over the next 10 years, and to eliminate the gap between qualification levels in Wales and the UK average over the same period. Furthermore, it also announced a pilot of an individual learning account to fund retraining for sectors with skills shortages and proposed an Expert Panel on Automation (which became the Review of Digital Innovation) to outline what steps Wales should take to harness the opportunities presented by automation (ibid).

A regional approach to skills provision

The last few years have seen a number of regional governance changes for the skills system in Wales. In 2014, the Welsh government introduced three new Regional Skills Partnerships (RSPs) to help to identify and respond to the skills needs of Wales. These were the Learning, Skills and Innovation Partnership (South East Wales), North Wales Economic Ambition Board (North Wales) and the Regional Learning and Skills Partnership (South West and Central Wales). Taken together they aim to influence the £400 million public investment into apprenticeships and FE provision. The Welsh assembly's Economy, Infrastructure and Skills Committee is currently undertaking an inquiry into Research Skills Partnerships and has just completed a consultation into their effectiveness (National Assembly 2019).

At the same time, we have seen the development of a number of City Deals within Wales. There are four City or Growth Deals in place or currently in development, with the Cardiff Capital Region Deal and Swansea Bay City Region Deal in place, and talks under way to develop North Wales and Mid-Wales deals too (Welsh Assembly 2017). The Deals in place see a mix of UK government, Welsh government and local authority funding alongside match funding from the private sector with the aim of investing in the regional economy.

Their creation has been seen by some as an opportunity to increase investment and infrastructure in cities across Wales. However, there is potentially an intrinsic challenge and tension in attempting to ensure that the money allocated through City Deals is complementary to the policy direction of both the Welsh and UK governments, and more specifically invested in line with the policy direction on skills within Wales. One worry highlighted through our interviews was that unless investment in skills provision was at the heart of plans, City Deal projects could lead to the importing of skills from outside of City Deal areas, and subsequently missing the opportunity to provide training and employment for those living in city regions or more broadly for people in Wales.

Broader policy agendas

Alongside skills-focused cross-cutting policy changes, there have been a number of broader policy strategies with potential impact on the skills system in Wales. In 2015 the Welsh government published its Wellbeing of Future Generations (Wales) Act 2015, which has the potential to affect all aspects of post-16 skills policy in Wales. The act set seven wellbeing goals for Wales, including: a prosperous Wales; a resilient Wales; a more equal Wales; a healthier Wales; a Wales of cohesive communities; a Wales of vibrant culture and Welsh language; and a globally responsible Wales (Welsh government 2015). The Act also developed the Future Generations Commissioner role, held by Sophie Howe, who aims to act as a 'guardian for the interests of future generations in Wales'. This role includes advising, carrying out research and reviews, making recommendations and supporting an advisory panel on future wellbeing in Wales.

In 2017, the Welsh government published its national strategy entitled *Prosperity for all* (Welsh government, 2017b), which built on the *Taking Wales forward* Programme for Government for 2016 to 2021 (Welsh government 2016). They share four key themes around 'prosperous and secure', 'healthy and active', 'ambitious and learning' and 'united and connected'. The strategy outlined five key priority areas for the Welsh government: early years, housing, social care, mental health and skills and employability, with wellbeing objectives for each. In addition, the strategy also attempted to adopt a new way of working, following the enactment of the Wellbeing of Future Generations Act. It included aims to create a new 'economic contract' between businesses and government and the aim to deliver fair work in Wales, building on the recommendations of the Fair Work Commission (Fair Work Commission 2019).

In 2018, the Welsh government launched its Review of Digital Innovation, led by Professor Phil Brown, with its first meeting taking place on the 14th of June 2018. The review was set up to assess 'exploiting technological advances in the economy' (Welsh government 2019g) and includes a team of experts across a variety of different fields linked to digital innovation. In 2019, the review launched its interim report highlighting definitions, the scale of the challenge ahead, risk

factors, the opportunities presented by new technologies and responses needed going forward for Wales (ibid).

Finally, the promotion and protection of the Welsh language across Wales has been a key cross-cutting policy for the Welsh government and assembly. The *Cymraeg 2050: A Million Welsh Speakers* (Welsh government 2017b) document and its implementation plan *The Welsh in education: Action plan 2017–2021* (Welsh government 2017c) highlight the Welsh government's plans for the Welsh language across the education and skills sector. One of the main calls within *Cymraeg 2050* is to see 1 million Welsh speakers by 2050. The plan seeks to undertake three strategic themes in order to achieve the goals set out in the document: increasing the number of Welsh speakers; increasing the use of Welsh in the workplace; and creating favourable conditions for the Welsh language to thrive (Welsh government (2017b)).

2.2 APPRENTICESHIPS AND TRAINING POLICY CONTEXT

Apprenticeships in Wales are currently organised through more than 120 apprenticeship frameworks across a range of sectors and job roles, with each framework containing competency and technical knowledge qualifications and at least two Essential Skills qualifications (Welsh government 2017d). In Wales, the costs of apprenticeships are covered mainly by the employer, however government funding is available to cover some of the cost of training and assessment. Apprentices must be paid at least the minimum wage and be aged 16 or over.

The Welsh government has set a target of delivering more than 100,000 apprenticeships between 2016 and 2021 (Welsh government 2019a). There are currently three forms of apprenticeship in Wales: foundation – level 2; apprenticeship – level 3; and higher apprenticeship – level 4 and above. New degree apprenticeships are being piloted following the recommendation of the Diamond Review (Diamond 2016) (see section 2.4) albeit at level six only for two frameworks – the 'digital and advanced manufacturing' and 'engineering' frameworks.

In addition, in 2016 the Welsh government introduced what it called an all-age approach to apprenticeships, focusing the system on older learners returning to the labour market as well as young learners leaving

school. However, within this all-age approach, priority has more recently been given to 16–19-year olds, and to level 3 or higher apprenticeships. Throughout our qualitative research we heard concerns that a focus on higher apprenticeships may reduce opportunities for those with lower qualifications to progress through qualification level. There were just over 30,000 new starts on apprenticeships in 2017/18 in Wales, an increase of over 30 per cent on the previous year (with much of this increase being driven by foundation apprenticeships).

There have been a number of key policy initiatives in relation to apprenticeships and training in Wales, including the introduction of the UK apprenticeship levy, the *Aligning the Apprenticeship model to the needs of the Welsh economy* report (below), the Jobs Growth Wales scheme, alongside the *Employability plan for Wales* (above).

In 2015 the UK government announced plans to create a UK-wide apprenticeship levy in April 2017, payable by large employers, based on payroll. In England, this coincided with significant reductions in public funding for in-work learning, with employers instead able to access funds through a voucher system, enabling them to 'reclaim' levy funding. In Wales, instead, the levy funding was received in consequential for the Welsh assembly, which in turn were mainly used to sustain existing provision. This has led to a disconnect for larger employers in Wales between paying the levy and the perception of being unable to directly reclaim it in Wales. Through our qualitative research we heard repeatedly of the barriers to UK-wide employers engaging with the skills system in Wales due to policy divergence between England and Wales (and the other devolved nations).

The Welsh government also published its *Aligning the apprenticeship model to the need of the Welsh economy* (Welsh government 2017d) report in February 2017. In response to the challenges facing the apprenticeship system in Wales, including a dominance of lower level 2 and 3 qualifications within the system and a view that there will be a rising need for level 4–6 qualifications in the future, the report highlights several delivery priorities for Wales for the 2016–2022 period. The report calls for a focus on apprenticeships at a higher level; for priority to be given to 16–19-year-olds within Wales' all-age apprenticeships; to develop skill pathways for apprenticeships to other learning and

alternative career progression; and the establishment of a new review system for apprenticeship frameworks, reducing framework numbers down from around 120 to a maximum of 30. It also placed emphasis on Welsh language learning and apprenticeships (ibid). Following the report, the Welsh government created an employer-led Welsh Apprenticeship Advisory Board (Welsh government 2018a) with the aim of helping to bring apprenticeship provision closer to the needs of employers and the Welsh economy.

Jobs Growth Wales (Welsh government 2019b) is an initiative offering people aged 16–24 a six-month work placement, paid at least the national minimum wage and working 25–40 hours per week, to gain experience and new skills. Public funding is available for up to 50 per cent of costs for six months towards the wages of the young person that they choose to take on. The Jobs Growth Wales initiative gives free support for recruitment through a dedicated managing agent, providing advice on sourcing candidates (ibid).

In line with government policy in Wales, in recent years there has been an increased focus on higher level apprenticeships above level 3, and in key priority sectors. Higher apprenticeships now represent almost one-fifth of provision (19.8 per cent) (Stats Wales 2019c), with 48 per cent of those in 'healthcare and public services' and 39 per cent in 'management and professional' apprenticeships (Stats Wales 2019d). In addition, restrictions have been introduced, particularly for older learners, in low-priority subject areas (including business administration, hairdressing and beauty, customer service and retail).

Overall, the apprenticeship and training system in Wales has not followed the path taken by the system in England, and from the perspective of those we interviewed this has been for the best. While there have been moves to create an apprenticeship system closer to the needs of employers and the economy, we have not seen the same marketised and voucher-based system as in England. In addition, there are still protections around quality and the key elements of what an apprenticeship is in Wales – also not seen in England. In the view of our research participants, apprenticeship policy in Wales is perceived to be

based more on partnership with employers rather than handing the majority of control (and budget) to employers as is the case in England.

2.3 COLLEGES IN WALES

Since 2008, colleges in Wales have undertaken a process of regionalisation. This has seen the number of colleges reduce via mergers from 25 to 13 (Jones 2013). Around two-thirds of those enrolled at an FE institution were people aged 16–18 (Stats Wales 2019a).

The number of learners in colleges has fallen in recent years in Wales, driven mostly by significant reductions in part-time learning. The number of unique learners at FE colleges in Wales for 2017/18 was 118,590 (ibid). 44 per cent were part-time learners and just over 20,000 learners were undertaking work-based learning (ibid).

The cross-cutting policies around skills and governance outlined above will have a significant impact on colleges in Wales over the coming years. Furthermore, given the uncertainty around EU funding following 2016's EU referendum, colleges in Wales are, in turn, facing uncertainty in relation to a significant proportion of their funding.

Through our qualitative research we found a general view that the college sector was stronger now than it had been in the recent past, but that the role of colleges within the wider Wales skills system could be better defined. The recent mergers in the system have generally had a positive effect on the sector as a whole. Those we interviewed with expertise across the skills system felt that the mergers were helping to create a more cohesive system overall, and helped with working towards reducing the levels of competition. Despite this, there seems to be confusion for some around the role played by colleges. Recently they have taken a significant role in delivering apprenticeships, but it was unclear whether their priority should go beyond this. Furthermore, with the recent decision by the Welsh government to focus more on level 4+ qualifications, there is now more crossover with the role of HE providers in delivering level 4–6 qualifications.

Overall, we have seen far less policy change for colleges in Wales in recent years, and certainly compared to other parts of the skills system.

However, this has not necessarily been seen as negative by the majority of research participants.

2.4 UNIVERSITIES IN WALES

There are eight universities in Wales, plus the UK-wide Open University. In recent years, there has been a reduction in the number of universities following mergers in 2011 and more recently in 2017. According to the latest Higher Education Statistics Agency (HESA) (2019) statistics, there were a total of 129,585 students enrolled in (HE) institutions across Wales. This total has been fairly steady in recent years, up slightly from 129,395 for 2016/2017 and 128,675 for 2015/2016, but down on 2014/2015 at 132,965 (ibid). Additionally, the number of students aged 25 or older in HE for 2017/2018 sat at 44,620 compared to 84,940 aged 24 and under (ibid).

The student and graduate population in Wales is particularly mobile given the close border with England. This means that skills policy in general – and in relation to the university system in particular – has to be considered in the context of any changes in England. The latest figures show that for 2016/17 there were 13,825 Welsh-domiciled graduates from UK universities, as against 14,650 UK graduates from institutions in Wales, showing a net 'gain' of 825 graduates in Wales (HESA 2018). However, in terms of where graduates find jobs, in 2016/17 there were 12,390 UK graduates employed in Wales post-graduation. This shows there were 2,260 fewer UK graduates employed in Wales than graduated directly from institutions in Wales (ibid). It demonstrates the cross-border nature of the university system and the cross-border nature of the economy in Wales (ibid).

Changes to student finance and HE funding in Wales and across the UK have had major implications for universities in Wales. The trebling of tuition fee levels in England following the election of the UK Coalition government in 2010, led to knock-on repercussions in Wales. Prior to this, and since 2007, the Welsh government had matched fee levels in England for students from England, Northern Ireland and Scotland studying in Wales, but subsidised fee levels of no more than £1,175 per year for Welsh students wherever they studied in the UK, through a tuition fee grant paid to Wales-domiciled students. This policy continued

in the immediate years following the changes in England, with fee levels matching £9,000 per year for rest of UK (RUK) students in Wales and capped at no more than £3,250 for Welsh students studying in RUK, at a cost of hundreds of millions of pounds a year. This system was replaced in 2018/19 after the introduction of reforms following the Diamond Review.

In 2014, the Welsh government established the Diamond Review to consider HE funding, student support arrangement and student finance in Wales, publishing the final report in 2016 (Diamond 2016). The review panel included representatives of students, universities and political parties, and received wide-spread cross-party and cross-sector support. In its final report the review recommended replacing tuition fee subsidies for Welsh students with new maintenance grants. This would see all Welsh students receive £1,000 in living costs grants, rising to a maximum of just over £9,000 per year for the poorest students (the equivalent of the living wage); with student loans offered to meet the full costs of tuition fees (£9,000 for Welsh students in the UK). Additionally, it recommended the introduction of equivalent support for part-time students to address the falling number of part-time students, as well as recommending furthering the provision of Welsh and Welsh studies in the Welsh HE system. The review also made recommendations around funding for research and innovation which have subsequently been developed further by the Reid Review (Reid 2018), with the aim of protecting and enhancing the profile of HE research in Wales after Brexit.

Overall, the Diamond Review aimed to free up the more than £200 million per year spent subsidising full-time tuition fees for Welsh students, to improve support for those from poorer backgrounds, older learners and part-time learners, as well as placing universities in Wales on a sustainable financial footing compared to the rest of the UK. It also made recommendations to expand 'earn-while-you-learn' provision in Wales, leading to the piloting of the new degree apprenticeships outlined above.

The recent Auger Review of post-18 education in England is likely to bring further knock-on effects for universities in Wales. If adopted by the UK government, the review will see the reintroduction of maintenance

grants, changes to student loan repayment terms and the reduction of fees in England. This will likely have direct financial implications for the Welsh government, which could in turn impact on public funding for universities in Wales. The Auger Review itself estimates its proposals would see an additional £900 million per year for the three devolved administrations in total (UK government 2019). At the same time, if adopted the recommendations will also likely have indirect impacts for universities in Wales, due to the potential for a lower tuition fee level in England than currently in Wales.

In addition, Brexit uncertainty is likely to bring financial implications for universities in Wales, as European funding brings hundreds of millions of pounds into the sector, primarily for research funding and through tuition fee income from EU students.

As the UK's future relationship with the EU becomes clear, it will be necessary to provide certainty for universities in Wales in relation to new funding arrangements.

Up to now, aside from financial changes, policy in Wales in relation to higher education has been more stable than in other parts of the post-16 landscape. This may change with the forthcoming implementation of the Hazelkorn Review which among other things will see the Higher Education Funding Council for Wales (HEFCW) replaced by a new tertiary education body to oversee the governance, priorities and funding for post-16 education in Wales.

Overall, much of the change for universities in Wales in recent years – unlike in apprenticeships and training – have been in relation to funding and student finance. These have firstly stemmed from UK government changes, and then from the Welsh government's responses. However, following the Hazelkorn Review, the Auger Review, and following the Brexit referendum, there are likely to be more significant policy changes for Wales' universities over the coming years.

2.5 BUSINESS AND EMPLOYER TRAINING

In 2017, 62 per cent of employers in Wales had invested in training or development over the last 12 months, compared to a UK average of 66

per cent (Department for Education 2019). In Wales, just over a quarter of training provided was health and safety training (ibid). The average number of days of training in Wales was 6.2

days, compared to a UK average of 6.8 days, totalling 4.4 million days of training in 2017. Worryingly this represents a drop in average days and total days of training in Wales between 2015 and 2017, continuing reductions seen since 2013. Across the UK, business investment in skills has remained broadly flat at just over £44 billion per year. However, investment per employee and training has dropped slightly to just under £2,500 per trainee and just over £1,500 per employee.

Many of the cross-cutting reviews outlined above have been attempts to draw the needs of business, employers and the wider economy into the way the skills system operates. It remains to be seen whether reforms to governance across the skills system in Wales at national and regional level; new earning and learning provision; and reforms to the apprenticeship structures in Wales; can improve employer engagement and involvement in the skills system and increase business investment in skills. This will be a key theme for our future work as part of this project.

2.6 LEARNER ENGAGEMENT

We have heard repeatedly of the need and desire to improve learner and student engagement across the skills system in Wales from our research participants. This was also a theme highlighted in the Hazelkorn Review. Increased engagement with students and learners is likely to be important to ensure that curricula are fit for purpose and remain so, and that outcomes around access, retention and graduate outcomes are as strong as possible. This will again be a key theme for future work of this project.

A crucial aspect that was raised repeatedly through desk-based work and interviews has been a focus on student and learner mental health. A number of our participants spoke of significantly increasing mental ill-health across the skills system and a need to focus on this urgently. A skills system that genuinely places learners and students at its heart is likely to be one that promotes their mental health, satisfaction and life chances for years to come.

2.7 THE ROLE OF THE WELSH GOVERNMENT

Research participants emphasised a number of positives and negatives of the relationship between the Welsh government and skills system in Wales. In particular, the relatively close proximity of government, in policy terms, to the skills system has been a constant theme from our qualitative research. There is clear support within the skills system for a number of the cross-cutting and sector-focused policy changes outlined above. Overall, we have found high levels of support for some of the most significant policy changes in Wales in recent years, including the Diamond Review, Hazelkorn Review, the Employability Plan and other non-skills-related initiatives such as the Future Generations Act in particular. There is also a recognition that the closeness of the Welsh government to the system has allowed for alignment between government and providers.

We also heard from those who see the negatives of this close proximity between government and the system. For some, the positives of alignment can be outweighed by an overly prescriptive approach to policy making within parts of the skills system, whether at the national or regional level. Likewise, the boundaries between ministerial portfolios can sometimes be unhelpfully replicated within the system, with administrative divides sometimes evident between further and higher education and the rest of the skills system, and between schools and the rest of post-16 education, learning and training.

Lastly, while the closeness of government to the sector has seemingly led to a responsive policy context, there is a risk that responsive policymaking turns into reactive policy making, with an overall hyperactive approach to changes in policy in parts of the system. The changes adopted following the Hazelkorn Review around system-wide governance will be important to retaining the positives of the policymaking context in Wales, while also beginning to address the negatives.

3. THE ECONOMY IN WALES

In considering the opportunities and challenges for the skills system in Wales it is important to understand the economic context in which the country is operating. In this section, we outline economic performance in Wales and some of the key economic trends over recent years.

3.1 THE SHAPE OF WALES' ECONOMY

The economy in Wales is dominated by smaller enterprises, with 98.5 per cent of all enterprises in Wales employing less than 50 staff. Of all enterprises in Wales, 76.6 per cent are sole traders who do not employ any other staff. In terms of employment, 49.8 per cent of employees are employed in small employers (employers with less than 50 staff) (Stats Wales 2018c).

As with the rest of the UK, over the last 20 years Wales has seen a decline in manufacturing jobs, continuing a long, steady decline. Table 3.1 shows the proportion of all jobs across the UK that were classed as manufacturing jobs in 1998 and 2018. It shows that across the UK manufacturing jobs have decreased from 14.7 per cent of all jobs to 7.7 per cent. In Wales, there has been a reduction from 18 per cent of all jobs to 10 per cent in 2018.

TABLE 3.1**Manufacturing jobs as a percentage of all jobs by UK nation and region**

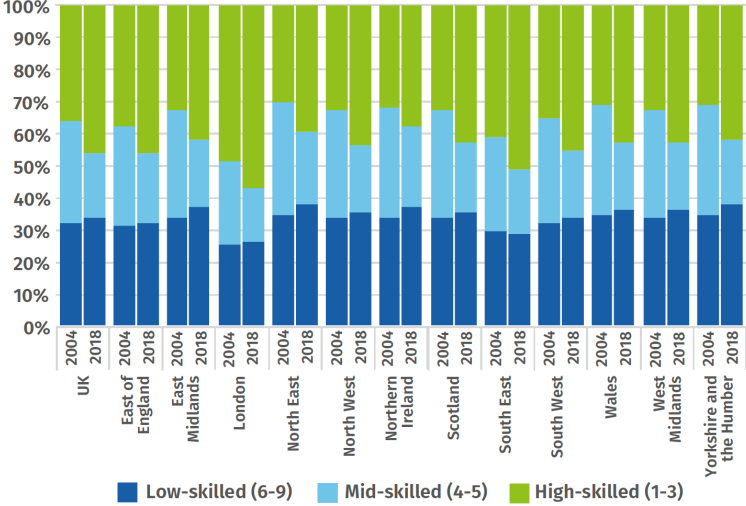
Nation	1998	2018
Northern Ireland	16%	11%
Scotland	14%	7%
Wales	18%	10%
English region	1998	2018
East	14%	8%
East Midlands	21%	13%
London	6%	2%
North East	18%	10%
North West	18%	9%
South East	12%	6%
South West	14%	8%
West Midlands	22%	11%
Yorkshire and the Humber	18%	11%
UK	14.7%	7.7%

Source: ONS (2019b) Workforce jobs by industry (not seasonally adjusted), IPPR analysis using Quarterly Labour Force Survey (ibid) data from 1998–2018 on workforce jobs by industry

By employment levels, Wales' economy has larger public administration, defence, education and health; production; and agriculture, forestry and fishing sectors than across the UK (Welsh government 2018f). It has smaller wholesale, retail, transport, hotels and food; finance and business activities; and 'other industries' sectors than across the UK (ibid). Of all jobs in Wales, just over two-fifths are classed as high skilled, just over a fifth in mid-skilled occupations, with the remaining just over a third of employees in lower skilled employment. As figure 3.1 shows, over the last 13 years, Wales has seen significant increases in the proportion of high-skilled jobs and decreases in the proportion of mid-skilled roles.

FIGURE 3.1

Percentage change in proportion of all jobs at different skill levels from October 2004–September 2005 and October 2017–September 2018 across the UK



Source: (ONS 2019b), IPPR analysis of the Annual Population Survey on employment type by Standard Occupational Classification (SOC) 2010 categories. High skill (per cent SOC 2010 Cat 1–3), mid skill (per cent SOC 2010 Cat 4–5), lower skill (per cent SOC 2010 Cat 6–9)

The increase in the number of high-skilled roles as a proportion of all jobs is welcome, and is a measure of success over the last 14 years in Wales. However, reductions in the proportion of mid-skilled roles could lead to career progression problems in attempting to move people out of low-skilled work.

Wales' economy is in many ways a cross-border economy, with significant cross-border flows with neighbouring parts of England. Just under half of the population of Wales live within 25 miles of the border with England. In 2016, it was estimated that 90,000 residents in Wales commuted for work in England (6.4 per cent of all residents) around twice the number of residents in England who commute to Wales for work. Residents in Wales who work in England earn on average 30 per cent more than those who live and work in Wales (Ifan and Poole 2018). The cross-border nature of the economy in Wales is also reflected in the cross-border nature of the education system, including the cross-border flow of students and graduates as outlined in section 2.

3.2 PRODUCTIVITY

Productivity improvements are understood to be the foundation on which a stronger economy and higher living standards are built. Current figures show that the Welsh economy has relatively low labour productivity rates (gross value added per hour worked – GVA per hour) compared to the rest of the UK. ONS figures on regional and sub-regional productivity in the UK (ONS 2019a), show that labour productivity was £28.10 GVA per hour in Wales compared to £33.70 GVA per hour worked across the UK. This compared to £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.

Within Wales there was significant variation at the local level, with £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 (ONS 2019a).

3.3 PAY

Wales' median gross weekly earnings for full-time employees were £509 per week in 2018, up from £498.30 in 2017 (Stats Wales 2018a). This is the second lowest rate of pay across UK nations and regions and compares to median gross weekly earnings for full-time employees of £569 per week across the UK, up from £550 per week in 2017. Furthermore, earnings in Wales as a proportion of the UK decreased from 90.6 per cent to 89.5 per cent (ibid).

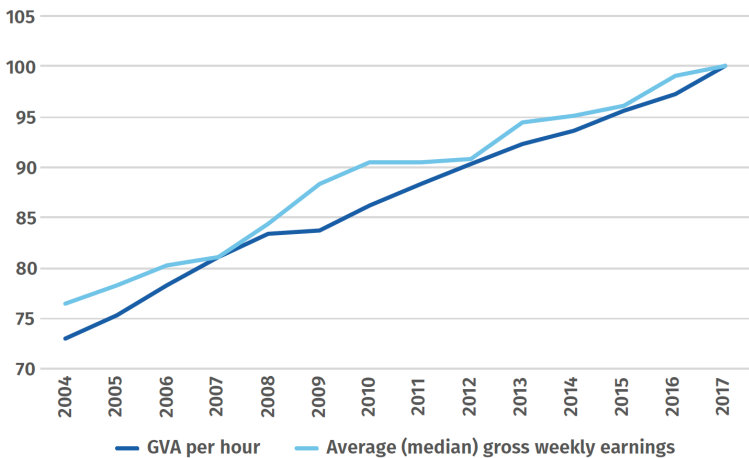
The gender pay gap in Wales by year (median hourly earnings for full-time employees excluding overtime) was 7.3 per cent in 2018 (Stats Wales 2018b). This is down from 13.7 per cent in 2008 and 17.7 per cent in 1998 (ibid).

The proportion of jobs paid below the real living wage is also high in Wales. Based on the Resolution Foundation's *Low Pay Britain* report for 2019, it was estimated that more than a quarter of jobs are paid

beneath the real living wage in Wales (27 per cent); higher than the UK average of 24 per cent, and of the UK regions only the East Midlands had a higher rate at 28 per cent (Cominetti et al 2019).

Figure 3.2 shows pay and productivity growth in Wales over time. It is clear that pay and productivity have followed similar trajectories in Wales, confirming the close relationship in both directions between boosting pay and boosting productivity.

FIGURE 3.2
Gross Value Added (GVA) per hour worked and average (median) gross weekly earnings in Wales from 2004–2017



Source: ONS (2019c) and Stats Wales (2018a)

3.4 CAREER PROGRESSION

Wales has performed relatively well in relation to career progression – the proportion of workers moving from low-skilled work to mid- or high-skilled work each quarter. Between 2013 and 2018, Wales had, on average, the second highest rate of career progression in the UK, with 6.8 per cent of workers moving out of low-skilled work to higher-skilled work each quarter (the second highest in the UK, second only to the east of England) (Gunson et al 2018). This compared to a UK average of 6 per cent. The Resolution Foundation, considering career progression through a different measure, found Wales to be around but beneath the UK average (D’Arcy and Finch 2017).

Career progression is crucial to driving pay increases and career progression for lower paid workers, as well as being essential for tackling in-work poverty and inequality. Boosting career progression rates above UK average could help to tackle existing inequalities in Wales.

3.5 POVERTY

Current figures show that 24 per cent of all individuals in Wales live in relative poverty, defined as having an income below 60 per cent of UK median income after housing costs (in 2015–16 to 2017–18) (Stats Wales 2019b). This is higher than the UK-wide relative poverty rate, which stands at 22 per cent over the same period, and rates across all other nations of the UK, with Scotland at 20 per cent, Northern Ireland at 18 per cent and England at 22 per cent (ibid). This is lower than in London at 28 per cent and equal to the West Midlands and North East, but higher than the remaining nine UK regions and countries. Relative child poverty rates in Wales are among the highest in the UK. Around one-third of all children in Wales are in relative poverty by this measure, with 60 per cent of those in working households (ibid).

3.6 EMPLOYMENT

Employment rate

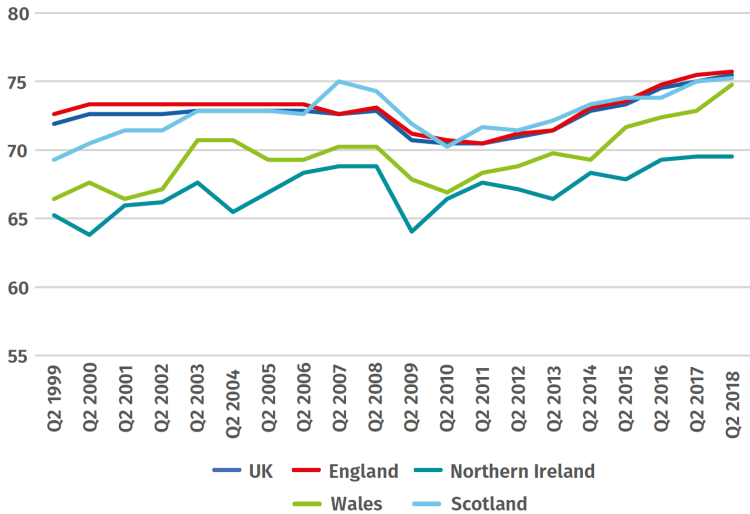
For the three months to March 2019, the employment rate in Wales sat at 75.4 per cent compared to 76.1 per cent for the whole UK, up 1.8 per cent on the previous year, and reaching a record high, up from a recent low of 67.2 per cent in 2010 following the 2007–08 financial crash (Welsh government 2019c). The region with the highest rate of employment in Wales was North Wales at 75.7 per cent, with the lowest being south west Wales at 69.9 per cent (Welsh government 2019d). In Wales, there is a clear gender employment gap, as there is across the UK. For the same period from January to March 2019, the employment rate for males was 78.9 per cent and 71.9 per cent for females. This compares to 80.3 per cent and 71.8 per cent respectively for the whole of the UK (Welsh government 2019c).

Over time there has been a significant improvement in the employment rate in Wales compared to the rest of the UK. In the last four years in

particular, Wales' record on employment has improved and come close to catching the rate across the UK. Figure 3.3 shows the employment rate across the UK over time, and shows a steady improvement in the Wales rate.

FIGURE 3.3

Employment rate over time across the UK



Source: Stats Wales (2019f)

Self-employment and zero hours contracts

In 2018, the number of self-employed people in Wales fell by around 12,000 to 202,000 people (Welsh government 2019c). This represents around 14 per cent of the workforce in Wales as compared to 13 per cent across the UK (ibid). In 2018, the numbers of people estimated to be employed on zero hours contracts in Wales also reduced from around 3.0 per cent to 2.8 per cent of all employees (ONS 2019c).

Youth unemployment

For 2018, Welsh government analysis of the Annual Population Survey (APS) estimates that 30,100 people aged 16–24 in Wales were unemployed, up 6.4 percent over the year (Welsh government 2019c). This represented 14 per cent of the economically active population in this age group, and is up 0.5 percentage points over the year. The equivalent UK rate was 11.6 per cent, down 0.5 percentage points over the year (ibid).

3.7 ECONOMIC INACTIVITY

In total, there were 399,000 people in Wales who were economically inactive for the three months up to March of 2019, down 39,000 from the same period a year prior (Welsh government 2019c). There were 148,000 economically inactive men or 15.6 per cent of those aged 16–64, and 240,000 economically inactive women or 25.1 per cent of those in Wales (ibid).

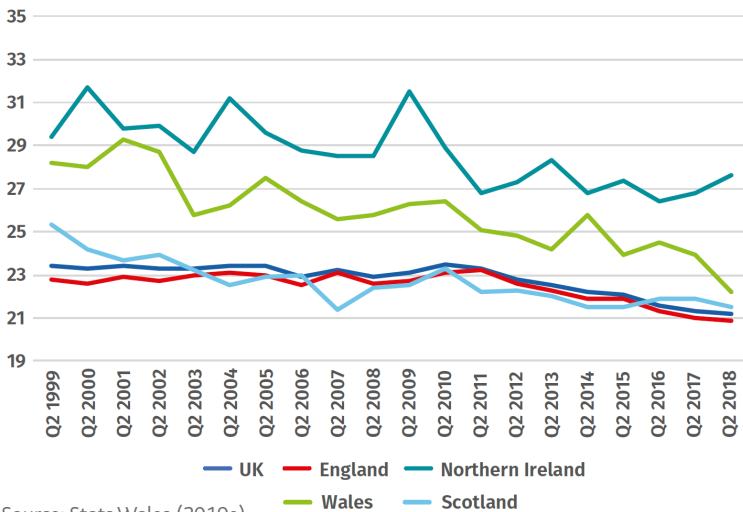
Economic inactivity in Wales was 20.9 per cent for the three months to March of 2019, down 2.1 per cent on the same period a year earlier (ibid). In comparison, the UK economic inactivity rate was 20.8 per cent, this is 0.23 per cent down from a year earlier (ibid).

This marks a significant and quick decrease in economic inactivity though may reflect only a temporary improvement. If this is sustained, further work is required to consider how this has been achieved and what outcomes previously inactive people are achieving.

A long-term trend of falling economic inactivity rates has brought Wales much closer to the UK average. Figure 3.4 shows economic inactivity rates across the UK over time. Wales' rates have improved, reducing to a level closer to the UK average.

FIGURE 3.4

Employment rate over time across the UK



Source: Stats Wales (2019e)

3.8 NEET

Welsh government estimates found that young people (aged 16–24) not in education, employment or training (NEET) in Wales for the period between 2016 and 2018 stands at 47,800, or 13.7 per cent of the total number of young people. This figure is down from 57,600 or 16.1 per cent between 2014 and 2016 (Welsh government 2019f).

The same figures for 2016 to 2018 show that the number of disabled people aged between 19–24 NEET stands at 14,400 or 39.8 per cent of that age group, in contrast to 23,600 or 11.6 per cent of the total number of NEET who are not disabled (ibid).

3.9 LOW AND NO QUALIFICATIONS

Overall, qualification levels held by people in Wales increased in 2017, continuing the general increase seen over time. Similar proportions of males and females hold no qualifications, while females are more likely to hold qualifications at or above NQF level 4. In 2018 the percentage of working-age adults with a level 4+ NQF qualification (or equivalent) was 38 per cent, compared with 48 per cent in Scotland and 37 per cent in Northern Ireland; 42 per cent for the whole of the UK; with 35 per cent for males, and 41 per cent for females (Welsh government 2019e). In Cardiff that number rises to 49 per cent versus Merthyr Tydfil at just 24 per cent. 39 per cent of those of white ethnic origin had level 4+ qualifications compared to 46 per cent of those from ethnic minorities. 28 per cent of people with disabilities had level 4+ qualifications versus 41 per cent of those not disabled. Finally, 43 per cent of those in employment had level 4+ qualifications versus 25 per cent of those in long term unemployment or economically inactive (ibid).

3.10 SKILLS-RELATED VACANCIES, SKILLS GAPS AND UNDER-UTILISATION

As well as understanding the broad trends across the economy of Wales, it is important to consider employers' experience in relation to skills. The Employer Skills Survey (ESS) is a survey of over 87,000 employers across the UK. The ESS asks employer establishments about recruitment, skills gaps for employees and applicants, underutilisation of employee skills,

anticipated needs for the future, and training and investment. The most recent ESS for Wales took place in 2017, with a total of 5,913 respondents (Department for Education 2019).

In 2017, out of 36,000 vacancies overall, Wales saw 10,000 skills-shortage vacancies (jobs that are hard to fill due to a skills-related reason). This held steady in terms of the percentage of companies in Wales with a skills-related vacancy (at 6 per cent) but increased as a proportion of all vacancies (27 per cent) and affected all sectors of the Wales economy. Only education and health and social work saw fewer than 20 per cent of vacancies categorised as a skills-shortage vacancy (ibid).

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 as skills' lacking among any applicants (ibid). Equally, in terms of people and personal skills, 56 per cent of establishments with skill-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 feeling or the feelings of others' in applicants (ibid).

In attempting to fill these vacancies, employers' responses focused on changing their recruitment methods or advertising spend. Only 9 per cent of employers reported that they had responded by increasing training for existing staff. Equally, only 9 per cent of establishments had responded by increasing or expanding traineeship programmes, with only 8 per cent of employers offering training to less-qualified applicants. Six per cent of employers had responded by increasing the salary on offer for the vacancy (ibid).

In terms of skills gaps within the existing workforce, fewer establishments in Wales reported skills gaps in 2017 than in 2015. 13 per cent of establishments in Wales reported skills gaps, amounting to 4.7 per cent of the workforce (around 57,000 workers). These figures are down from 16 per cent and 5.8 per cent respectively for 2013 (ibid).

38 per cent of skills gaps were attributed by the employer to a lack of training, 33 per cent because of the introduction of new technology and 25 per cent because performance had not improved sufficiently following training (ibid). Seventy per cent of establishments reported increasing training activity in response to these skills gaps, up from 66 per cent in 2015.

More than a third of establishments report to not fully utilising skills within their workforce. 36 per cent of establishments reported underutilisation within their workforce, and in total 9.7 per cent of employees reported to have skills that are not being utilised. Both of these have increased since 2015.

For Small and Medium Enterprises (SMEs), only 22 per cent of employers of 2–4 staff, 42 per cent of 5–24 staff members, and 65 per cent of employers with 25–49 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.

4. WHERE IS THE SKILLS SYSTEM GOING IN WALES?

As outlined above, there are strengths and weaknesses within the Welsh economy and there have been changes in the policy context in Wales. However, alongside these Wales-specific trends there are UK-wide and global challenges and opportunities facing Wales at this time. This section considers four of these: automation; ageing; Brexit; and the changing nature of globalisation.

4.1 AUTOMATION AND A CHANGING TECHNOLOGICAL LANDSCAPE

Whether described as the fourth industrial revolution, automation or technological change, it is clear that new digital technologies such as artificial intelligence (AI), internet of things (IoT), block-chain, data analytics and new smart technologies are bringing technology into roles, skill levels and parts of Wales' economy not touched by previous waves of technological change.

Previous IPPR research (Lawrence et al 2017) has shown that 46.4 per cent of jobs in Wales have high potential for change through automation. Across the UK, accommodation and food services, as well as wholesale, retail, and repair of vehicles have the highest proportion of jobs with high potential for change through automation at 65 per cent and 64 per cent respectively (ibid). Notably, it is parts of these sectors that make up a large proportion of the Welsh economy as of 2019 (Stats Wales 2018d). This does not mean that around half of all jobs are at risk of vanishing due to automation. Whether automation takes place will depend on economic and social factors, and new jobs are also likely to be created. However, it is likely that technological change will lead to significant disruption in key areas, with tasks within job roles restructured around new technologies. Furthermore, with significant change will come significant demand for reskilling and upskilling.

As mentioned in Section 2, The Welsh government has recently established the Review of Digital Innovation to report on the potential impact of automation for Wales, led by Professor Phil Brown (Welsh government 2019g). The interim report highlights that claims of large-scale technological unemployment over the next 10– 20 years are 'greatly exaggerated', and that most important will be the disruption and change in work, rather than the gaining and loss of jobs (Brown 2019). It is this transformation of work that is most important, and key to a future Welsh skills strategy, rather than the prospect of mass joblessness resulting from automation.

We have undertaken analysis looking at the jobs in Wales which have the *highest* potential for automation, including those where new technologies could significantly alter job roles or displace workers in particular occupations. Using Office of National Statistics (ONS) estimates of the automation exposure associated with particular job roles, we have assessed the proportion of the workforce across the nations and regions of the UK facing the highest potential for automation to affect their job.⁴ This could see significant numbers of workers in roles such as cleaning, catering, waiting and bar work facing the greatest exposure to change or disruption through automation.

Table 4.1 shows the proportion of jobs with the highest level of potential for automation in the regions and nations of the UK. It shows that 6.2 per cent of roles across the UK as a whole have a high potential for automation. Wales is slightly more exposed than the UK as a whole, with 6.5 per cent of roles with a high potential of automation, amounting to a total of 130,000 jobs.

⁴ Occupations with an ONS probability of automation of 0.66 or more are classified as being at high risk of automation. Probabilities were generated on analysis of equivalent job roles in England alone. This analysis follows a different methodology to Lawrence et al (2017).

TABLE 4.1**Proportion of jobs in the nations and regions of the UK with a high potential for automation**

Nation	%
Northern Ireland	6.4
Scotland	7.3
Wales	6.5
English region	%
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 (2019e)

Without action, these changes could widen economic inequalities. Of the 130,000 jobs at the highest risk of automation in Wales, women workers are more likely to be impacted than men, and low-paid more likely than higher paid. Whereas women make up 48 per cent of workers in Wales, just under two-thirds (65.1 per cent) of the jobs at the highest risk of automation in Wales are done by women.

The process of automation has already begun and is likely to continue to spread across the Welsh economy. By 2030 and again by 2040, we are likely to see a very different Wales economy to now, with disruption likely to affect the workforce over the coming decade or two. While automation may be inevitable, the impacts of automation is not, and

looking at how it can be utilised to narrow existing inequalities will be crucial. By shaping the automation transition we can aim to ensure that workers share the gains secured by technological change across the economy. In particular we can ensure that our automation transition is gender- proofed and tested against its ability to narrow social-economic inequalities more broadly.

A significant proportion of Wales' workforce of 2030 and 2040 have already left compulsory education. Table 4.2 shows that more than 80 per cent of the projected 2030 workforce of Wales and more than 60 per cent of the 2040 workforce has already left compulsory education. This shows that to have a significant impact on the skills, resilience and capabilities of Wales' future workforce, a focus on young people and school-age provision will not be enough.

TABLE 4.2

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

Year	Proportion of workforce already left compulsory education in Wales
2030	81.5
2040	60.8

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

There are huge opportunities presented by automation for the Welsh economy. Preparing current and future generations of workers and investing in the skills needed to capitalise on these opportunities, could ultimately yield huge gains for Wales.

The Welsh government and assembly have begun to develop their policy agenda in relation to automation. In addition to the Review of Digital Innovation there has been a focus on the prospects of automation through a number of assembly committees (National Assembly 2018). However, given the pace of change, and the likely scale of change, there is a need for early action to control the possible impacts of automation. This is likely to require a more flexible skills system, one that can be

tailored more easily to individual students and learners and to individual employers. It also needs to focus on lifelong learning, across publicly and privately funded skills provision. This will be a major focus for the future work of this project.

While we may not yet fully know the shape of change that will come through automation in Wales, we can begin to understand the scale of ambition required. We can also identify some of the key elements of a skills system in Wales, designed to take the opportunities of automation, driving down inequalities, and lifting up economic performance.

4.2 AN OLDER WALES

The population in Wales is projected to age rapidly over the coming years, and the implications of an ageing workforce are far-reaching. Wales already has the highest percentage of its population over retirement age in the UK (Stats Wales 2019h). The percentage of the population in Wales aged 60–75 years old is projected to increase from 17.3 per cent in 2016 to 18 per cent by 2025, reaching a peak of 19 per cent by 2032. At the same time the over-75 population is projected to increase from 9.1 per cent of the population in 2016 to 11.4 per cent in 2025 before reaching 12.4 per cent in 2030 and 14.7 per cent in 2040.

People living longer is a public policy triumph and should be celebrated. There will be opportunities brought by an older population but with the number of older people in Wales expected to rise, substantial changes will be needed to prepare for an older Wales.

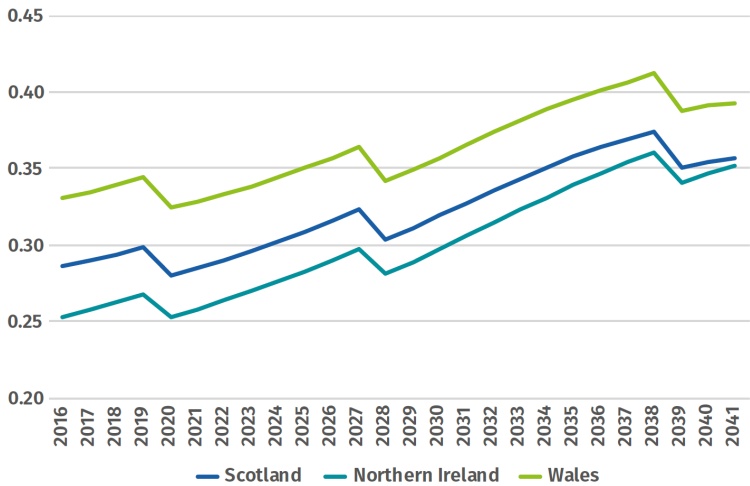
The increasing ageing population has two main implications for Wales. First, as more people retire and leave the workforce, there will be a reduction in the relative size of the working age population. This will put pressure on the working age population to produce more with fewer people. Second, as the older population increases it is likely to put greater pressure on public services in general – and health and social care in particular – increasing demand for higher public spending.

Figure 4.3 shows the projected dependency ratio in Wales, as well as Northern Ireland and Scotland, over time. It shows that Wales is projected to move from around 33 pensioners per 100 working age

population now, to 36 per 100 in 2030, before increasing rapidly to more than 40 pensioners per 100 working age population towards the end of the 2030s. This shows Wales' population will age to a greater extent than Northern Ireland and Scotland, whose populations are also ageing significantly. Even accounting for a rising pension age, Wales will have the oldest population of any of the four nations in the UK by some margin.

FIGURE 4.3

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



Source: IPPR analysis based on population projections by year and age using Stats Wales (2019g), 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 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.

Clearly, a Wales that sees four pensioners for every 10 people of working age, has significant implications for the skills system. How Wales can work to drive down inactivity rates and drive up productivity rates will be crucial to getting the most out of the remaining working age population. Equally, a larger older population is likely to require finding ways to better extend careers rather than shut them down at retirement age. A skills system aimed squarely at reducing inactivity and increasing

career progression, pay and productivity could be at the centre of preparing for, and responding to an older population. This will likely be a key focus of the rest of this project.

4.3 BREXIT UNCERTAINTY

The UK's vote to leave the European Union (EU) in 2016 has led to great uncertainty across Wales. Regardless of the outcome of Brexit, it is clear that there are a number of related challenges faced by Wales' skills system.

One of the key challenges the country faces in the shadow of Brexit is funding. Wales currently receives around £680 million per year from EU sources (Welsh government 2018d), with just under £300 million per year from the European Structural Funds. The skills system in Wales receives significant funding from EU sources. For the period 2014–2020 the total Structural Funding will amount to over £2 billion investment into Wales with a significant proportion either directly or indirectly supporting provision within the Wales skills system, with just over £330 million estimated spend on research and development and just over £200 million on SME competitiveness (through the European Regional Development Fund (ERDF)), plus a further just under £380 million for skills for growth, £260 million for youth attainment and employment, and just over £200 million for tackling poverty through sustainable employment. While not all of this funding will come directly to parts of the skills system, much of it is likely to at least indirectly support skills provision.

The UK government's proposed Shared Prosperity Fund (SPF) would replace EU funding following the UK's departure from the EU. However, the details of the SPF are not yet clear, and funding levels and arrangements for administering the funding have not been outlined. In particular, whether the SPF will be calculated, either initially or over time, through the existing Barnett-formula block grant arrangements, will be crucial to protecting levels of funding to Wales through any EU-replacement funding. Equally, whether the SPF is devolved to Wales, and the other devolved administrations, will enable greater or lesser alignment with economic and education priorities in Wales.

Brexit has affected – and will continue to affect – immigration levels and patterns into Wales. There have already been reductions in the levels of net EU immigration across the UK since the referendum. Regardless of the outcome of negotiations between the UK and EU, it seems clear that net immigration levels from EU citizens into Wales will decrease. This could exacerbate skill gaps, reduce opportunities for innovation, and require a greater focus on upskilling and reskilling the existing population in Wales. There is also a particular issue for universities in Wales and their ability to continue to attract students from across the EU, and under which tuition fee arrangements.

Finally, the economic effects of leaving the EU could have wider implications for skills investment from both employers and the public sector. Regardless of the form Brexit takes, it seems clear that economic growth could be lower than it otherwise would be, creating further pressures on public funding. Given the existing economic context in Wales and across the UK, this could lead to restricted levels of investment in skills in Wales. Clearly this has a potential effect on funding levels for providers within Wales, and also demand from employers for skills provision.

While the UK's future relationship with the EU remains unclear, it is clear that wherever negotiations end up, Brexit has already had – and will continue to have – an effect on the economy and the skills system in Wales. Whether through direct EU funding for the skills system, through indirect funding via employers in a weaker economy, or through changes in migration already being seen, Brexit will be a significant challenge for the skills system in Wales. Training and skills investment will become even more important and working with people throughout all age groups will be even more necessary as the existing Welsh-domiciled population will be more relied upon.

4.4 THE CHANGING NATURE OF GLOBALISATION

We have seen a number of recent high-profile economic casualties in Wales. Whether in steel or car manufacturing, parts of Wales' economy, and whole communities in some areas of Wales, have been hit incredibly hard by recent negative economic news. The uncertainty caused by Brexit negotiations have had a part to play in these decisions. However, there are several global trends taking place impacting on these global sectors at the same time.

The more protectionist trade policies employed recently by the US across parts of the world, alongside the reduction in the impact of multilateral global trade and economic organisations and institutions means this may not be a short-term trend. Increasing global trade barriers could instead be here to stay, with ongoing impacts for the Welsh economy.

It is not possible to foresee concrete future trends with any certainty with regards to global trade. However, there is still a great potential for broadening the scope of globalisation, particularly in services. Over the last few decades we have seen the redistribution of manufacturing sectors across the globe, however we have seen far less of an equivalent trend in tradeable services. Even if globalisation has reached its high watermark in some areas, there are still other parts of the global economy that could continue to see further integration, bringing opportunities for those countries able to take advantage of them.

Finally, even if levels of globalisation begin to recede from current levels, there is a great deal of opportunity for Wales – and the UK as a whole – to increase exports to levels similar to those seen in other parts of the world. There is, therefore, room for Wales to look outwards to a greater extent. If this is to be a priority for Wales, it will in turn need a skills system focused on providing the necessary skills, and influencing the business practices that encourage the development of this outlook across the economy. This will undoubtedly be a key priority going forward for the second report in this project.

5. KEY CHALLENGES AND OPPORTUNITIES FOR THE SKILLS SYSTEM IN WALES

This is the first of two reports looking at what a 21st century skills system for Wales would look like. As such, this report acts as a discussion paper and aims to outline the policy, economic and wider context for Wales – and therefore the context for the work of the skills system in Wales. Furthermore, we have also been able to outline some of the key trends Wales faces going into the future.

In developing this discussion paper, we have undertaken a mix of face-to-face research to hear from those in and around the skills system in Wales together with desk-based research to look at the key trends and economic data. There are several key challenges and opportunities for Wales as we look ahead to the rest of the 21st century.

As automation, technological change and an ageing population bring significant disruption to Wales both in social and economic terms, the skills system will need to be ready to prepare for the future and respond swiftly to help those affected by these disruptive changes. Brexit and the changing nature of globalisation are already taking effect both directly and indirectly, and will continue to do so over the coming years. The funding outlook for skills in Wales looks to be constrained for some time into the future, from both employers and public sources. Furthermore, Wales goes into this uncertain future with its own persisting economic inequalities and challenges.

However, there are significant strengths that play in favour of the skills system in Wales. The changes in recent years within parts of the system may help to deliver the skills system Wales will need, and likewise the recent policy reviews being put into place look positive for the future

in broad terms. Moreover, Wales brings significant intrinsic strengths, including its size and ability to respond quickly in policy terms.

Ultimately, building a skills system for the future that is responsive to the needs of learners and employers, and focuses on the long-term success of Wales remains the priority. Plotting a path for the skills system through these uncertain times will be difficult but necessary to ensuring that Wales can come through the 21st century challenges and opportunities, having addressed the legacy of those 20th century challenges still affecting many people and areas of Wales.

Through our work so far, we have highlighted 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 Wales' 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.

Now we will use the 10 challenges and opportunities in our next phase of research to understand what success would look like, in order to understand what will need to change and what will need to stay the same to develop a skills system in Wales ready for the rest of the 21st century.

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