

TOWARDS A GENDER EQUAL WALES:



Responding to a
Transforming
Economy

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Women's Place in the Future of Economy

1. Introduction

Our economic world has been transforming at an unprecedented rate. We are now living through the Fourth Industrial Revolution, driven by technology, embodied in *automation* and *digitalisation*; this revolution is fundamentally changing our lives, how we work and social, economic and political relations.¹ The technological revolution, however, is not the only force transforming our lives, the climate crisis is the most urgent issue of our time that risks leaving a disastrous world to future generations if not tackled. This crisis requires immediate action to move us toward greener economies. In addition to these two significant trends in our economy, Covid-19 paralysed the world and changed every aspect of our lives. Unsurprisingly, discussions now focus on 'recovery' and how our economic plans and approaches may need to change. Taken together, this context provides unique challenges and opportunities to re-shape the Welsh economy.

Due to the persistent inequalities in the world we live in, some groups of people (mostly low-income groups with protected characteristics) are more vulnerable to radical transformations in the economy than others. From a gender perspective, women and non-binary people are more vulnerable than men due to long-established and deep-rooted gendered barriers and inequalities.

If existing inequalities are not considered carefully as we prepare for the future, respond to digitalisation and transition to a green economy, then we risk recreating and reinforcing the disadvantage many already face. Yet, there is little emphasis, if any, on equality in policy-making in this space. Only by mainstreaming equality into policy and practice can we ensure that the economy of the future is green, caring and equitable.

This report aims to shed a light on women's place in the future of the economy, particularly regarding digitalisation and the transition to a green economy. While there is significant discussion of these major trends in the economy, equality and the need for a fair and just

¹ First Industrial Revolution lasted from the late 18th c. to the late 19th c. characterised by the introduction of steam power and machines to the production process. The second industrial revolution lasted from the late 19th c to the mid-20th c. identified with the mechanisation, development of production lines and mass production. The third industrial revolution is dated from mid 20th c. to the beginning of the 21st c. and is characterised by the growth of computerisation and extensive globalisation of goods and markets. With the development of digital technologies such as AI, robotics and the internet of things, it is accepted that we are now living the fourth industrial revolution. (Brown P. (2019))

transition are often missing. We consider how these trends will affect women's participation in the economy and progress towards gender equality and how we can prepare for the future effectively. We apply a gender lens to the main discussions around digitalisation and the green economy, and we identify potential barriers and opportunities to ensure that inequality reduces as we transform the economy. By setting out clear recommendations for change, we provide a roadmap for Wales to achieve a fair and green recovery and economic future.

Major trends in the economy

The determining factors of the Fourth Industrial Revolution are automation, digitalisation and the use of Artificial Intelligence (AI) in many sectors, and the transition to a green economy in response to the climate crisis. These trends bring about significant change in our economy and the way we live.

This transformation is already taking place. We are seeing the ever-increasing use of AI, more discussion of decarbonisation and the emergence of green industries. The mainstream discourse around these trends emphasises the likely demand for high-skilled, professional and technical occupations predominantly in Science, Technology, Engineering and Maths (STEM) areas and in sectors traditionally dominated by men. According to this discourse, the low-skilled, particularly administrative jobs in which women are overrepresented will likely diminish.

Too often, discussions about digitalisation and the green economy treat these issues separately, but in reality, these two issues are inextricably linked and are part of an integrated process of transformation. These issues must be considered together - automation and digitalisation will also help build a green economy, and a green economy will advance a better technological transformation.

In the face of this transformation, a key consideration must be how we can ensure it is fair, just and equal and ensures the well-being of both people and the planet. If these changes are simply left to happen, they will likely exacerbate existing inequalities. However, if equality is put at the heart of this transition, we can seize the opportunity to radically transform existing economic relations, tackle inequality and turn back the clock on the destruction of our planet.

Some critical questions must be addressed as this transition occurs – how can existing inequalities be overcome, and how can the current and future workforce be prepared for the transformation. We are at a crossroads; now is the time to bring in new ways of thinking about economic structures and look beyond traditional approaches to economic development and policy-making. It's not enough to simply change what we do, we must change how we do things, by mainstreaming equality into all that we do.

As UN Women underline:

it is necessary to focus on the historical, social and institutional mechanisms that reproduce interlocking systems of subordination and privilege, creating specific patterns of discrimination. To bring about change, as well as using disaggregated data to analyze who is being pushed behind, it is important to identify how this happens – the ideas, interests and institutions that perpetuate intersectional forms of oppression.²

In this research, we consider the extent to which the government, labour market and workplaces in Wales are prepared for a just transition in relation to digitalisation and a green economy. While consideration of equality appears to largely be absent from mainstream discourses on these issues in Wales, there is a clear commitment to social justice, well-being and the foundational economy. With legislation such as the Well-being of Future Generations Act, Wales has a framework in place for doing things differently and focusing on sustainability, but more needs to be done both in policy and practice to ensure that the opportunities presented by digitalisation and the green economy are seized to deliver a green, caring and equitable economy.

Lessons learned from Covid-19

Covid-19 caused millions of deaths globally, destroyed livelihoods and caused a global economic recession. The world was thrown into turmoil, and it became clear that existing systems are fragile, reinforce inequality and simply do not work for many. There is a clear need for sustainable, green, equal and just economies.

The pandemic affected women and other disadvantaged and marginalised groups disproportionately. More women were working as key workers, but still, women were the ones who lost their jobs in the crisis. Women bore the brunt of caring responsibilities and domestic work while in lockdown and violence against women increased. Covid-19 clearly showed how structurally unequal our societies and economies are.

UN Women's report *Beyond Covid-19: A Feminist Plan for Sustainability and Social Justice*,³ underlines three major crises that emerged with Covid-19: first, the crisis that women experienced at an individual scale; second, a livelihood and care crisis that many people suffered drastically, and the third is the environmental and climate crisis. These crises are deeply rooted in an economic system that *"freerides on women's unpaid and underpaid labour, exploits the natural environment and has led to an extreme concentration of wealth and power among the few while causing a deep sense of insecurity among the many."*⁴

² UN Women (2021) p. 8.

³ Ibid.

⁴ Ibid. p.8.

While some focus on a return to normal as we emerge from the pandemic, it's clear that we need a focus on a green, just and equal recovery, and wider social and economic transformation to overcome inequalities and secure a sustainable future.

There are many lessons to be taken from the Covid-19 crisis. In relation to women and gender equality, these are:⁵

- **Women are key workers of the foundational economy.** The Covid-19 pandemic showed us that foundational sectors of our economy are critical for everyone. While we celebrated key workers during the peak of the Covid-19 pandemic, it is not likely that the working conditions and wages in these sectors will be improved under the current economic system.
- **Women work in precarious positions.** Covid-19 hit some sectors particularly hard, including sectors where women dominate the workforce such as retail, hospitality and tourism. Large numbers of women have dropped out of the labour market entirely, as many of them also lost or couldn't access childcare.
- **We're reliant on women's unpaid labour.** During the peak of the Covid-19 crisis, paid and unpaid care became the most critical and essential element of coping with the pandemic. Both paid and unpaid care increased in intensity and significance. The extent to which the care economy relies on women's unpaid and underpaid labour has been exposed as never before.
- **Women are underrepresented or not represented at all in decision-making.** Many decisions that deeply affected women's lives were often taken without any involvement or consultation with women. Accountability to and participation of civil society actors has been largely side-lined during the pandemic. Democratic roll-backs and 'the tyranny of the urgent'⁶ affected women's lives substantially and can be hard to overcome once a crisis is over

The Covid-19 pandemic showed that women's labour is critical to social and economic life, as well as the well-being of communities, yet women's labour is still undervalued and structural gender inequalities still determine their participation in the economy and decision-making. The pandemic experience shows us that unless gender equality is placed at the heart of policy-making, and unless structural inequality is addressed, a fair and just transition where everyone can prosper and flourish will not be achieved.

⁵ Ibid.

⁶ "The "tyranny of the urgent" means that when governments operate in "crisis mode", they often close ranks and rely heavily on male-dominated executive structures, frequently without consulting adequately with parliaments, civil society and other stakeholders, drowning out women's voices in the process." UN Women (2021) p. 66.

2. Research Focus and Methodology

2.1. Research Framework and Methodology

Mainstream analysis of major economic trends too often lacks any consideration of social issues and socio-economic relations. This analysis is rooted in orthodox economic thinking that focuses on growth and traditional economic indicators, such as GDP and GVA, and often prioritises male-dominated industries. Such analysis also commonly ignores the social issues and inequality created by orthodox thinking over decades.⁷ In contrast, non-orthodox economic thinking, including feminist economics, emphasises that it is not possible to achieve a green, fair and equal future within the measures and limits of orthodox economic thinking. Instead of GDP and GVA, equality, care and the well-being of people and the planet are placed at the heart of these alternative economic approaches.

In this report, our analysis of the major trends in the Welsh economy and their likely impact on the labour market and women's economic participation applies a feminist lens and challenges traditional economic approaches to bring about a progressive agenda for Wales. We draw upon the priorities set out in various Chwarae Teg reports including [Feminist Recovery](#), [Gender Equality Review](#) and [Manifesto for Gender Equal Wales](#).

2.2. Research Questions and Methods

The main questions that the research seeks to address are:

- What impact will automation, digitalisation and the transition to a green economy have on women?
- What barriers are women likely to face in the future as the economy is re-shaped by these trends?
- What action is needed to achieve gender equality in this economic transformation?
- To what extent is gender equality being considered in the Welsh Government's response to these trends?

Further questions have shaped the analysis of these two major economic trends, and these are outlined in Appendix A.

The report contains two main parts. In the first, we apply an intersectional, feminist lens to two major trends in the economy – digitalisation and automation; and the transition to a green economy. We consider how these trends will likely impact women in Wales. While

⁷ Cohen M. and MacGregor S. for WBG and Wen (2020).

there is a wealth of literature analysing automation, AI and green economy trends and some analysis of their impact on women in the workforce and gender equality, there is limited literature on how these trends will affect Wales, particularly the Welsh labour market and women working in Wales.

In the second we consider how well existing policies and programmes aimed at responding to these economic trends, mainstream equality. To do this, we apply our Intersectional Gender Analysis Framework (detailed below) to identify any gaps and inform recommendations for Welsh Government and other actors.

2.2.1. Intersectional Gender Analysis Framework (IGAF)

To bring a systematic approach to the analysis of the policies considered in this report, Chwarae Teg developed an Intersectional Gender Analysis Framework in 2021, drawing on existing tools and literature about gender mainstreaming and our experience analysing public policy.

Women, men and non-binary people are affected by existing structures and policies differently. Our societies and social and economic relations are unequal and biased. Gender hierarchies and power relations exist in social and economic structures, which are embedded within mainstream thinking and understanding, and are reflected and reinforced in public policy.

Despite the existing gender inequalities, often a so-called *gender-neutral* approach is taken in policy-making. In practice, this approach is in fact gender-blind, as it fails to take account of gendered power relations and structures and gendered hierarchies. This approach will not produce equitable outcomes, and will merely recreate existing inequality.

Gender analysis in policy-making is critical so that gendered power relations are considered, and challenged. Failing to embed equalities mainstreaming in policy development and a lack of diversity in the policy-making process, means missed opportunities to “*counter the valorisation and normalisation of traits and life patterns that sustain male privilege*”⁸.

Chwarae Teg developed an intersectional gender analysis framework (IGAF) to critically analyse policies, programmes and other relevant documents (we refer to them as ‘policy’ from now on) affecting people’s lives. The IGAF is composed of two stages. In the first stage, a critique of the policy considers the extent to which equality has been considered and mainstreamed throughout. This means considering whether equality is discussed, whether equalities evidence is used, the potential impact of the policy, as written, on women and whether opportunities to tackle historical and structural inequality have been taken through

⁸ Ibid.

the commitments and action in the policy. In the second stage, recommendations are made to strengthen the policy itself and the policy-making process (better use of equalities evidence, more engagement with those with lived experience, improved equality impact assessment etc.).

A summary of our policy analysis is provided in chapter 6 of this report, and a more detailed description of the Intersectional Gender Analysis Framework is included in Appendix B. We do not include detailed recommendations to improve each of the policies analysed, but our analysis provides some overarching insights that have informed our broader recommendations in this report.

3. Women's Place in the Welsh Economy

To properly understand the likely impact of automation, digitalisation and the transition to a green economy, it's important to understand the current picture of gender equality in the Welsh economy.

Before highlighting some economic figures about intersectional gender equality, it's useful to underline the general structure of the Welsh economy. The graphic below shows the Gross Value Added (GVA) in Wales by sector in 2019, which shows, that Wales is a service economy.⁹

		Percentage of all industries	Total (million)
Services sector		71.2	47804
Services sector	Real estate activities	11.4	7662
	Human health and social work activities	10.7	7196
	Wholesale and retail trade, repair of motor vehicles	9.7	6501
	Public administration and defence; compulsory social security	8	5339
	Education	6.5	4338
	Financial and insurance activities	4.4	2961
	Administrative and support service activities	3.8	2578
	Accommodation and food service activities	3.6	2411
	Professional, scientific and technical activities	3.6	2447
	Information and communication	3.4	2292
	Transportation and storage	2.9	1966
	Other service activities	1.7	1159
	Arts, entertainment and recreation	1.3	849
	Activities of Households	0.2	107
Production Sector		22.1	14860
Production Sector	Manufacturing	16.8	11265
	Electricity, gas, steam and air-conditioning supply	2.3	1519
	Water supply, sewerage, waste management	1.9	1257
	Agriculture, forestry and fishing	1	660
	Mining and quarrying	0.2	159
Construction		6.7	4477
Construction	Specialised construction activities	3.3	2204
	Construction of buildings	2	1349
	Civil engineering	1.4	924

Source: StatsWales, Gross Value Added in Wales by industry

⁹ StatsWales, Gross Value Added in Wales by industry.

The Welsh economy is highly dependent on the service industries, including foundational sectors such as health and social services, education, and public services. However, manufacturing accounts for 16.8% of Wales’ GVA, making the sector the highest contributor to GVA alone.

3.1. Welsh workforce and sectors by gender

The graphic below shows the economic activity rates in Wales by gender and age.¹⁰ As the graphic shows, the employment rate of women aged 16-64 is approximately 4.5% lower than the employment rate of men in the same age group.



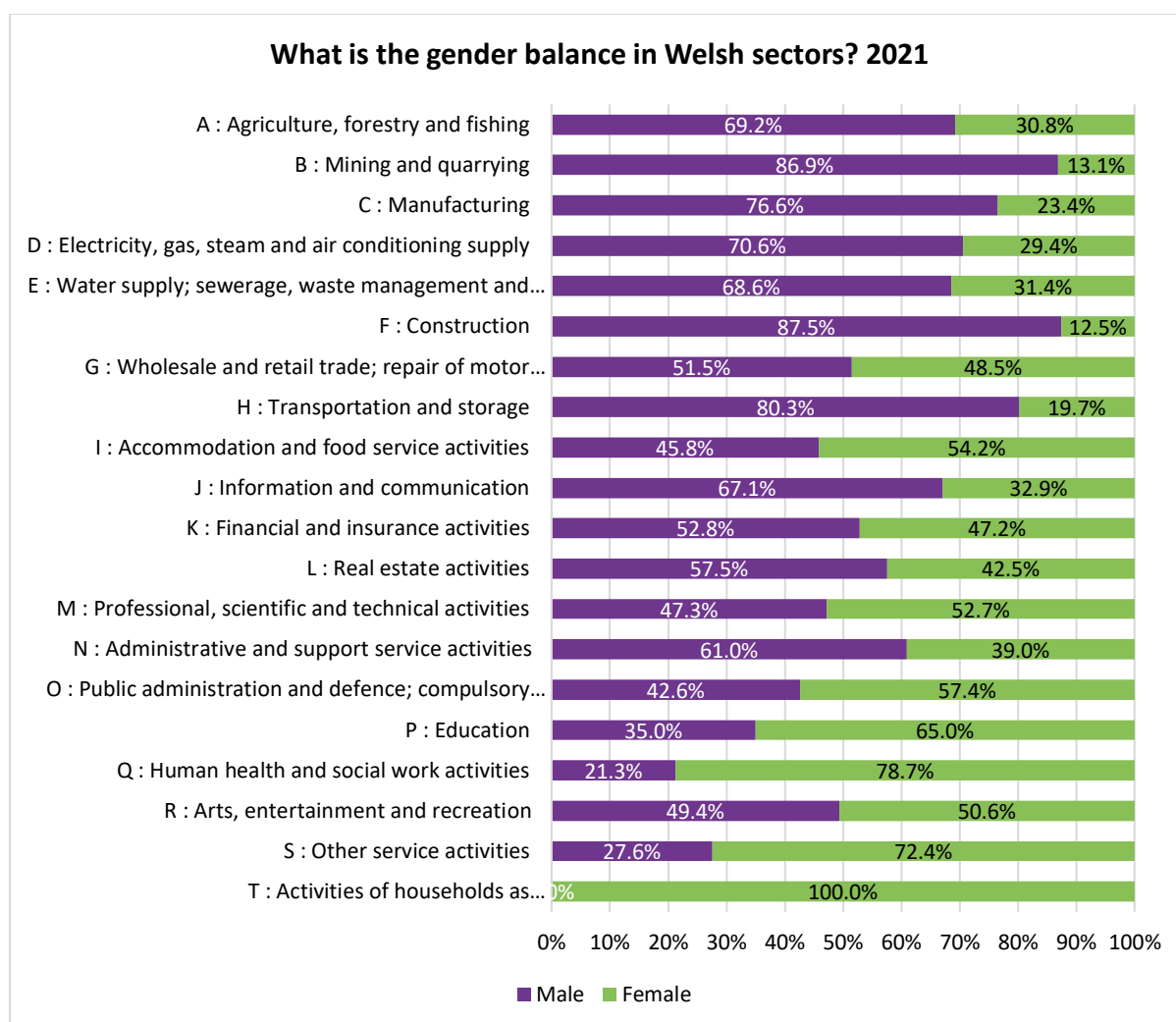
Source: Annual Population Survey, July 2020-June 2021

There are intersectional segregations in the labour market in Wales. Ethnic minority women have the lowest employment rate at 60.3%, compared to 70% for white women and 76% for ethnic minority men.¹¹

¹⁰ Annual Population Survey, July 2020-June 2021.

¹¹ Ibid.

Across both sectors and occupations, we see significant gender segregation in Wales.¹²

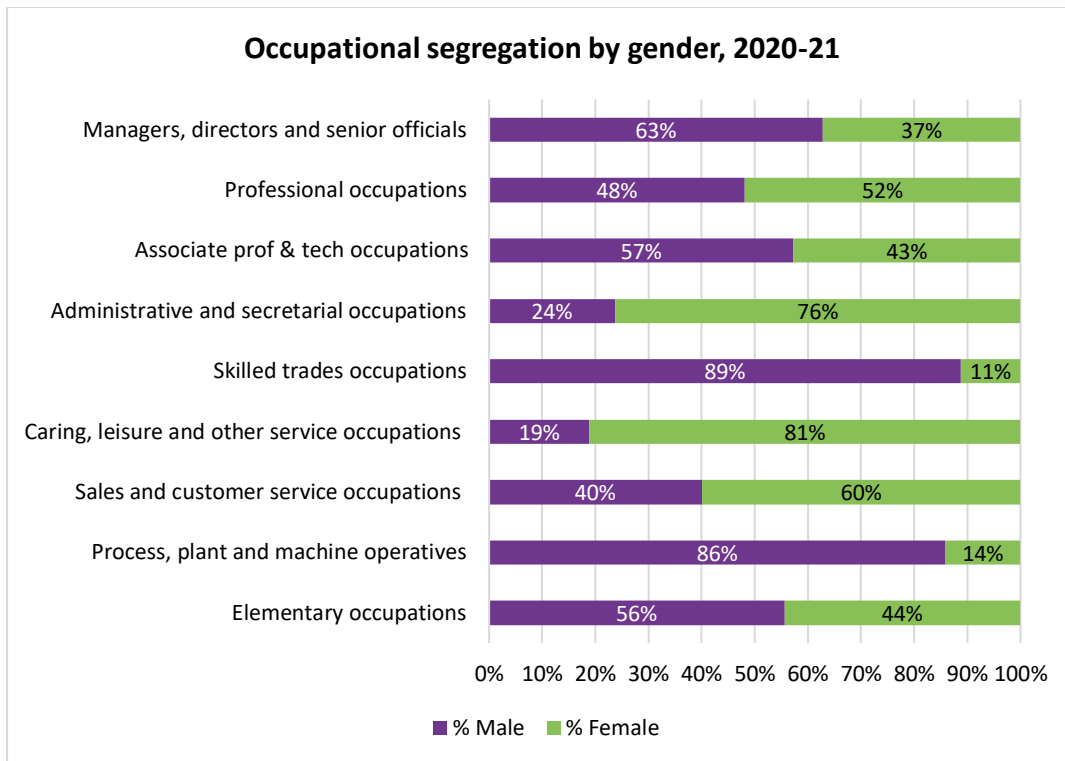


Source: Annual Population Survey, Sector (SIC 2007) statistics, July 2020-June 2021.

Women are underrepresented in science, technology, engineering and maths (STEM) sectors, and the majority of women (52.1%) work in public administration, education and health and social care sectors. Only 10.2% of working women work in manufacturing, construction, energy and environment, ICT and transport sectors. Similarly, women make up the majority of administrative, caring, leisure, and service occupations as the graphic below shows.¹³ There is a more even distribution of the male workforce across sectors. This sectoral segregation will have implications for who is affected most by both digitalisation and the transition to a green economy.

¹² Annual Population Survey, Sector (SIC 2007) statistics, July 2020-June 2021.

¹³ Annual Population Survey, Occupation (SOC 2010) statistics, July 2020-June 2021.



Source: Annual Population Survey, Occupation (SOC 2010) statistics, July 2020-June 2021

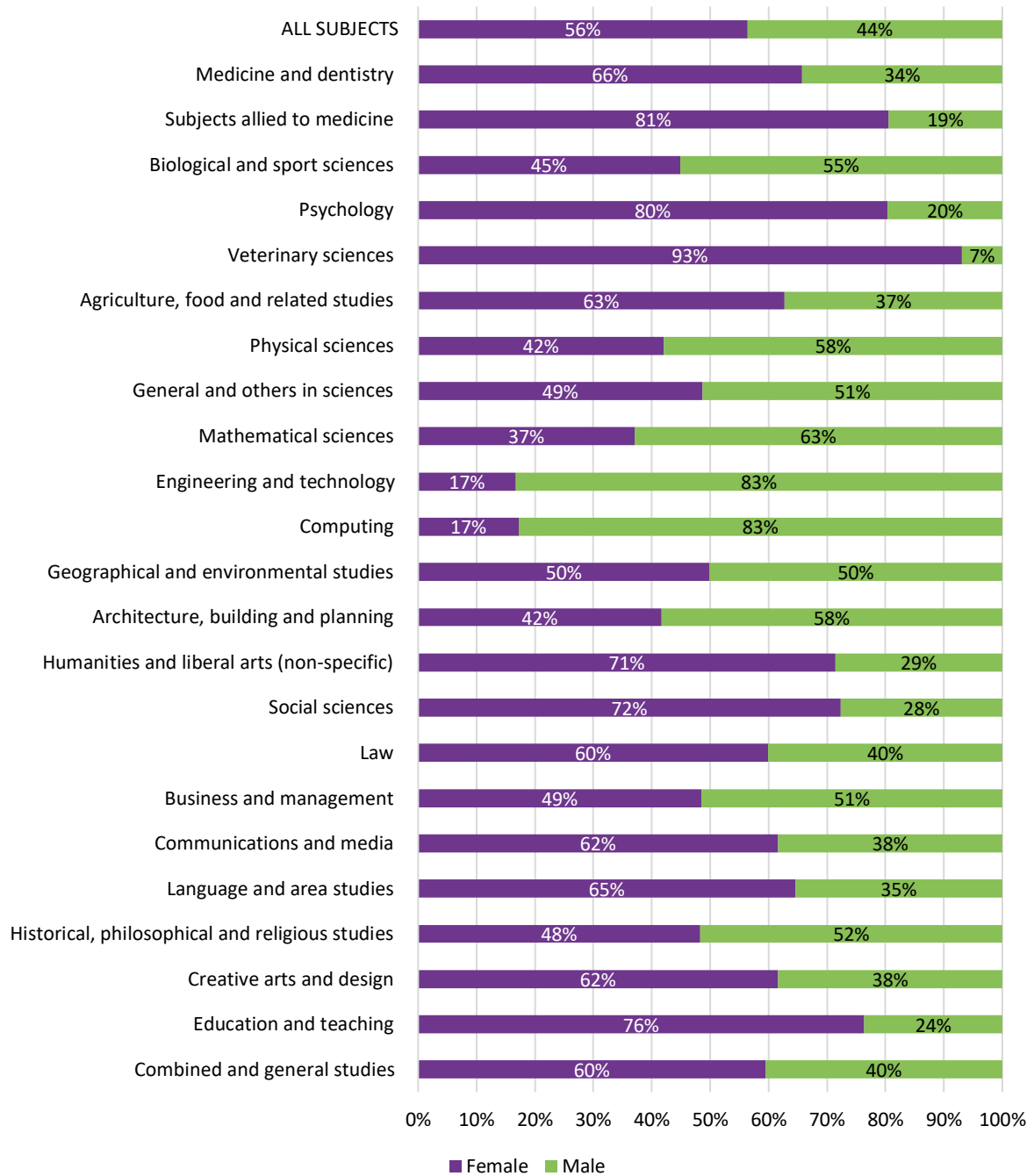
3.2. Education and subject choices in Wales

Sectoral and occupational segregation is rooted in the choices made throughout education. The graphic below shows student enrolments in higher education (HE) in Wales by subject area and gender.¹⁴

Overall there are more women enrolled in HE with 56%. But, there are clear gender gaps in subject choices, which align with the traditional sectoral segregation between men and women.

¹⁴ StatsWales, Student enrolments in Wales by HECOS subject, level and mode of study.

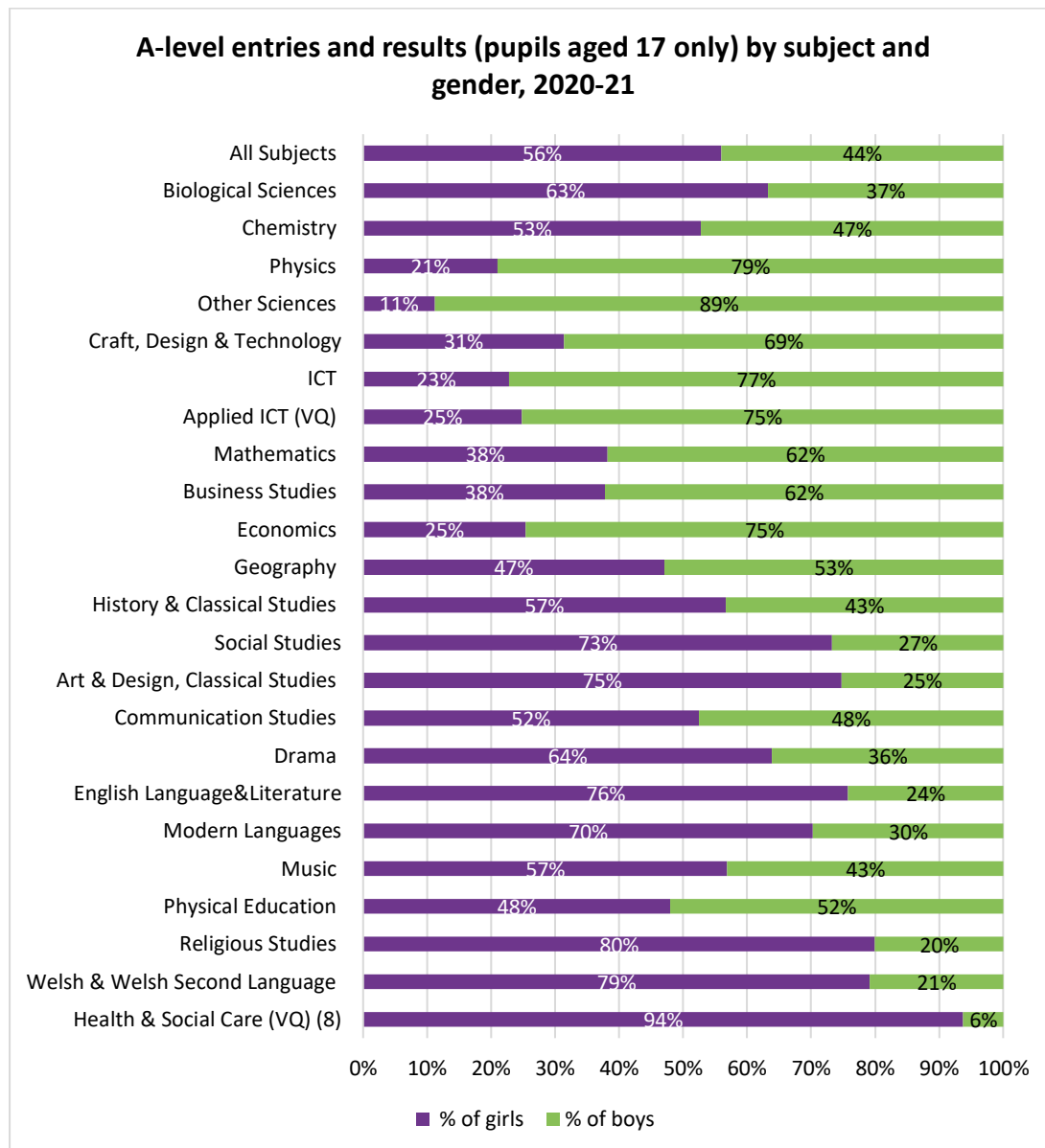
Student enrolments in HE Wales by subject and gender, 2019-20



Source: StatsWales, Student enrolments in Wales by HECOS subject, level and mode of study

Women are much more clustered in social sciences, health and social care, and art and humanities topics. The proportion of women studying mathematical sciences (37%), engineering and technology (17%), and computing (17%) is particularly low. Women are more highly represented in subjects allied to medicine (such as nursing and health care with 81%), psychology (80%), veterinary sciences (93%), and education and teaching (76%).

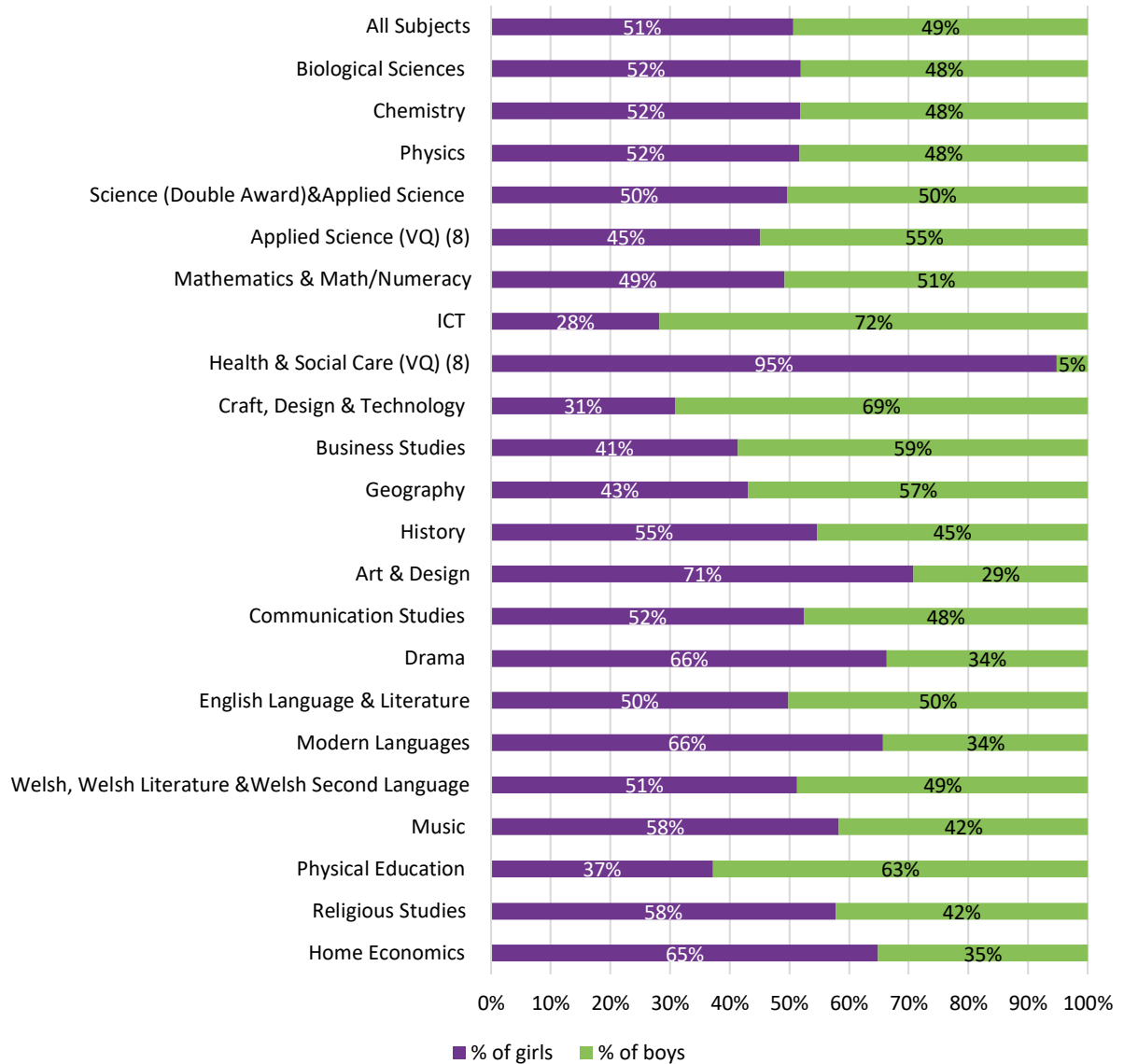
Gender disparity in subject choice is also seen at GCSE and A-Level. The two graphics below show A-Level and GCSE subject areas by gender in 2020-21.¹⁵ Between GCSE and A-Level, we see some significant drops in the number of girls studying certain subjects, for example, Physics drops from 52% female students to 21%, while biological sciences see the reverse with the proportion of female students rising from 52% at GCSE to 63%. At both GCSE and A-Level, subjects which are not compulsory such as ICT, show a low proportion of female students at both levels.



Source: StatsWales, A level entries and results (pupils aged 17 only) by subject group and gender.

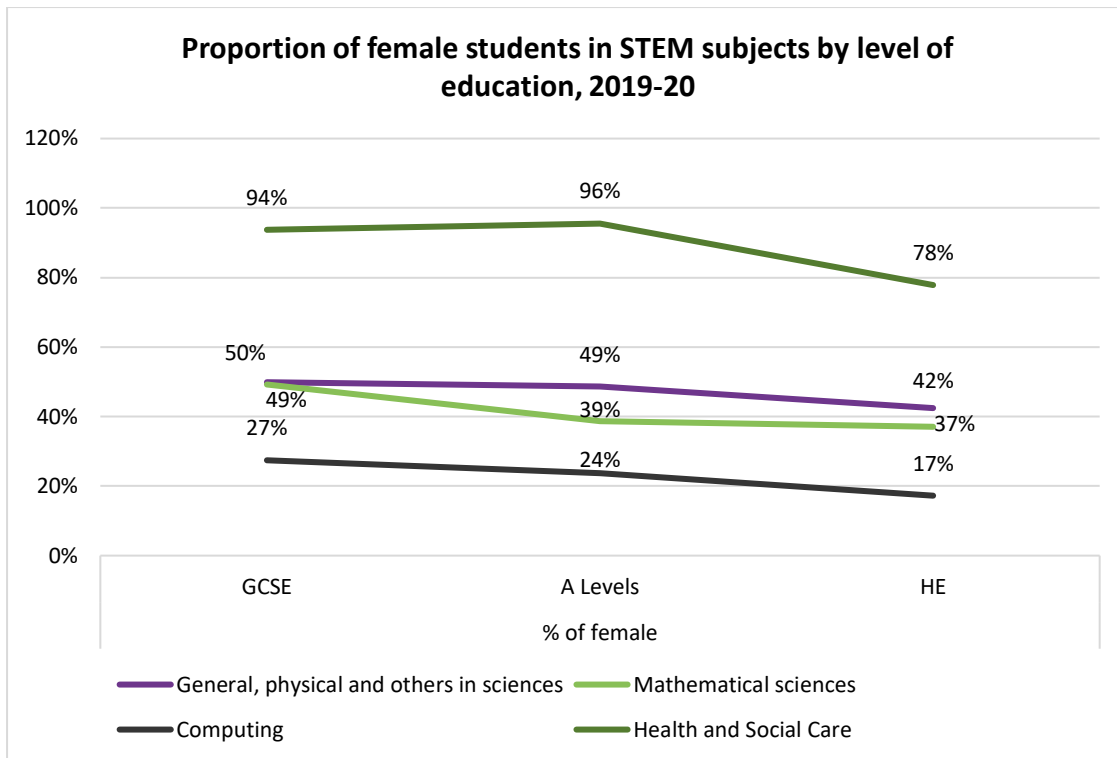
¹⁵ StatsWales, A level entries and results (pupils aged 17 only) by subject group and gender and StatsWales, GCSE entries and results (pupils in Year 11/pupils aged 15) by subject group and gender.

GCSE entries and results (pupils in Year 11/pupils aged 15) by subject and gender, 2020-21



Source: StatsWales, GCSE entries and results (pupils in Year 11/pupils aged 15) by subject group and gender.

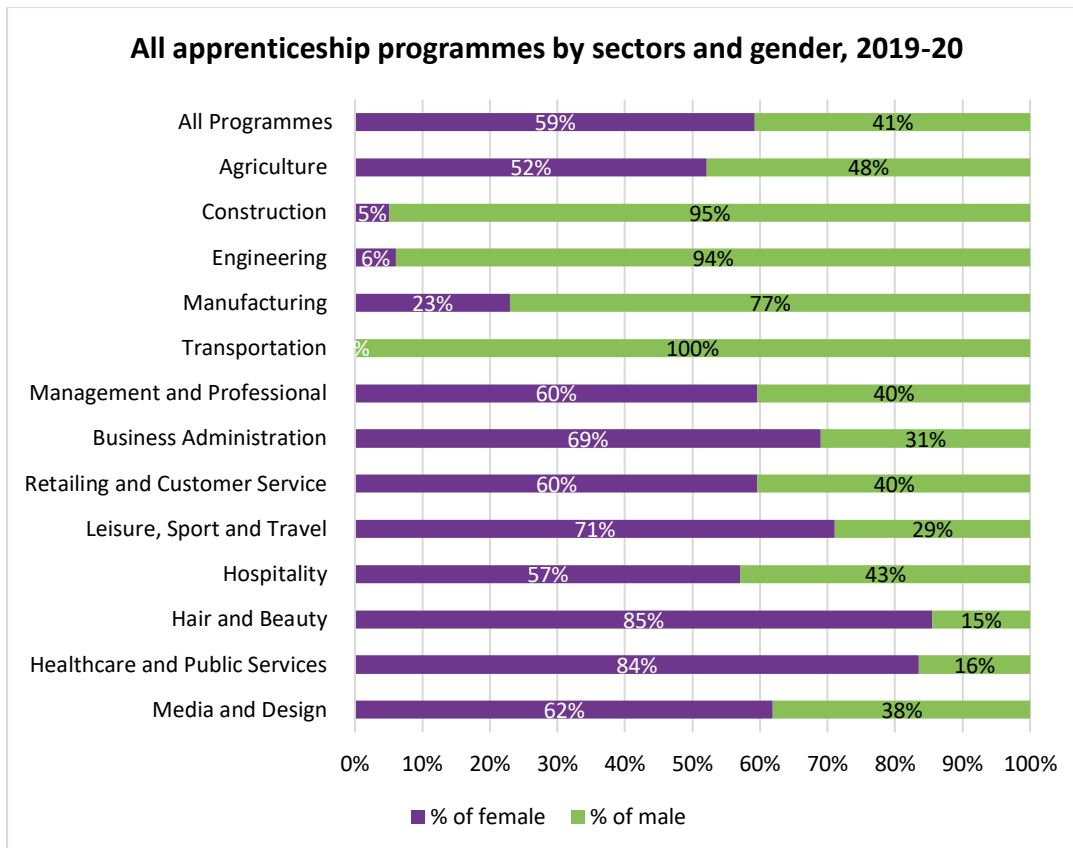
The graphic below shows women’s take-up of some STEM subjects from GCSE to HE. While there are more women in these areas at the GCSE level, when study of science in some form is compulsory, the proportion of women in these areas drops significantly as they move through post-16 education.



Source: StatsWales, GCSE entries and results (pupils in Year 11/pupils aged 15), A level entries and results (pupils aged 17 only) and Student enrolments in Wales by HECOS subject, level and mode of study by subject group and gender.

Apprenticeships remain an important route into industry but remain one of the most heavily segregated areas by gender. While more women take up apprenticeships than men – 59% - the disparity is clear across sectors.¹⁶

¹⁶ StatsWales, Work-based learning programmes by age group, gender and programme type.



Source: StatsWales, Work-based learning programmes by age group, gender and programme type

Women only make up 5% of construction, 6% of engineering, 23% of manufacturing, and 0% of transport apprentices. In contrast, they make up 85% and 84% of hair and beauty and health and public services apprentices.

3.3. Conclusion

The Welsh economy relies heavily on service sectors which are more prone to automation and digitalisation, and are dominated by women. Welsh sectors are heavily segregated on the basis of gender; whilst the majority of women work in service sectors, production sectors such as manufacturing, energy and environment, agriculture – the sectors which are critical for the green economy – remain dominated by men.

This segregation in the economy is rooted in educational choices made by young people, which remain heavily shaped by gender stereotypes. Women are much more clustered in social sciences, health and social care and art and humanities subjects. The number of women in STEM subjects drastically drops through GCSE to post-16 education, once studying science is no longer compulsory.

Apprenticeships, a key route into industry, also remain heavily segregated on the basis of gender. To date there have been no targets placed on providers to help address the imbalance, and progress to close gaps remains very slow.

4. Automation and Digitalisation of the Economy

Traditionally, automation and digitalisation has meant the shifting of routine and repetitive tasks away from human labour to machines. But increasingly, the digitalisation of work is going beyond the mechanising of routine tasks with the emergence of new digital technologies, computerisation and the use of algorithms.¹⁷

Automation and digitalisation at work and in day-to-day life are often discussed in dark scenarios of a post-human economy, where robots and computers have replaced human beings, causing significant job displacement; and more often than not, these scenarios are discussed as something that will happen in the future.

The concerns that are at the centre of these discussions have some merit; many jobs are at risk of displacement and many tasks are likely to be carried out by machines and computers thanks to automation and digitalisation. However, there is a misperception in the debate that automation is an uncontrollable phenomena, a one-off event, and an aspect of our future. In fact, automation is not a new phenomenon or an issue of the future; automation has been happening for many years in different sectors, particularly in traditional sectors such as agriculture and manufacturing, where many jobs have been displaced by labour-saving automation.¹⁸ What has changed, is that in recent years automation has begun to take new forms and has accelerated and expanded with the computerisation of more white-collar jobs thanks to developing AI technologies.¹⁹ Perhaps we don't see human-looking robots as a taskforce yet, but robots, AI and machines are everywhere. Automation and digitalisation are processes, and our day-to-day life is more and more organised by algorithms and AI technology.

There are many positive as well as negative sides of automation and technological revolution – a discussion that is beyond the scope of this report – but, the important question to be asked about the *Fourth Industrial Revolution* is, how egalitarian and equitable this process is. How is equality situated in the Fourth Industrial Revolution? How will structural inequalities and gender disparities be addressed within automation and digitalisation? What are the gender implications of this transition to what extent are women's jobs at risk of displacement? How can women be better engaged in the process?

¹⁷ Key technologies relevant to digital innovation include Artificial Intelligent (AI), blockchain, big data and data analysis, cloud computing, Internet of Things (IoT) and digital twins, additive manufacturing and 3D printing, autonomous things, virtual and augmented reality. (Brown P. Review for Welsh Government (2019) p.18)

¹⁸ Brussevich M et al. (2019) IMF Working Paper.

¹⁹ Brussevich M et al. (2019) IMF Working Paper.

Historically, industrial revolutions have exacerbated existing inequalities and created new ones.²⁰ It would therefore be ill-advised to presume that the Fourth Industrial Revolution will be any different without intervention. Unless equality and the well-being of people and the planet are mainstreamed into the process of, and response to, automation and digitalisation existing inequalities will likely worsen. There are already growing concerns that automation and digital technologies are exacerbating existing inequalities. Research shows that women and people with protected characteristics are underrepresented in the development and decision making processes of digitalisation and digital technologies are not accessible to many and they are exclusionary.²¹

From a gender perspective, there are two important aspects of the discussion on automation and digitalisation. The first is how automation will affect work and the subsequent impact on the workforce, particularly on gender equality and existing gender gaps in the labour market. The second is how representative, accessible and equitable digital technologies are, and considers bias and exclusion in digital technologies, the digital divide and digital poverty.

4.1. Automation at work and gender equality

The main discussion around automation and digitalisation of work is around job displacement and job losses. However, by focusing on occupations rather than the tasks that make up these occupations, the full impact of automation is likely to be overlooked. The risk and impact of automation on jobs essentially mean that machines would be able to undertake work activities (tasks) performed by workers.²² As it is tasks that become automated, a task-based approach to measuring the impact of automation is needed.²³

Compared to ‘occupation oriented’ estimates, ‘task oriented’ estimates give more conservative and realistic figures about job losses, and combine the tasks with the characteristics of individual workers to understand who is more exposed to automation.²⁴ The task-oriented approach underlines that the potential for automating entire occupations

²⁰ Komlosy A., (2018)

²¹ EIGE (2020); Roberts C. et al. for IPPR (2019); McKinsey Global Institute (2019).

²² Cortes P. and Pan J. (2019).

²³ The task-based approach to implications of automation in the workforce based on the seminal paper of Autor, Levy and Murnane (2003) *The Skill Content of Recent Technological Change: An Empirical Exploration*, *The Quarterly Journal of Economics*, vol. 118(4): 1279-1333.

For the details of task-based approach discussion, see MacBride-Stewart S. and Parken A. (2021), Brown (2019), McKinsey Global Institute (2019), Brussevich M et al. (2019).

²⁴ “Routine Task Intensity (RTI) index is one of these methods. RTI index is used at the individual level to compare task composition at work if each worker. *“The RTI index evaluates the relative importance of abstract skills, such as reasoning and interpersonal communication and non-routine manual skills against routine tasks which can be easily automated.”* (Brussevich M. et al. 2019). RTI index also allows to include characteristics of workers, such as gender, age, skills (e.g. numeracy and literacy) and other characteristics.

²⁴ For the difference in calculations, see Arntz, M., T. Gregory and U. Zierahn (2016) and PWC (2018).

is much lower since there are some ‘bundles of tasks’ in every occupation that are much more difficult to automate.²⁵ Analysis of this approach predicts that more jobs are likely to experience change than automated.²⁶ Yet, the estimates in this approach can also varied.²⁷

Looking only at automation and digitisation when making these estimations about job replacement and displacement, means that other important factors influencing the labour market are ignored. The decision to automate a task is not made only on the basis that automation is possible, but also whether doing so has economic benefits, e.g. it is less costly than human labour. If human labour is cheaper, then it may not make commercial sense to businesses and automation of that role or task may not take place.²⁸ Furthermore, there is always uncertainty around the future economy, as different unexpected and unprecedented events can give rise to different types of market dynamics.²⁹ The economic impacts of the Covid-19 pandemic are an example of just such an unexpected event.

An OECD analysis of automation in the UK applying a task-based model estimates that 25% of jobs will change and only 10% of jobs will be fully automated.³⁰ Under this model, job change is likely when 50%-70% of tasks can be automated, while full automation is likely when over 70% of tasks can be automated.³¹ Following a similar, task-oriented calculation, the Brown review for Welsh Government suggests *19% of tasks will be automated in Wales by 2037*.³²

The risk of automation has reduced since 2011, with an estimated 1.5m in England employed in jobs at high risk of automation.³³ The numbers working in low-risk roles have increased, to account for 27.7% of all employees in England.³⁴ When applying an equalities lens, important differences emerge concerning the risk of job losses. ONS analysis for England found that women made up 70.2% of the occupations at high risk of automation, 50.3% of the medium risk of automation, and 42.6% of the low risk of automation in 2017.³⁵ Part-time workers, who are much more likely to be women account for 70% of all

²⁵ ONS (2019b). The probability of automation in England

²⁶ Brussevich M et al. (2019), Roberts C. et al. (2019), Brown P. (2019), ONS (2019b).

²⁷ For the purpose of this paper, instead of a detailed discussion of different methodologies of measuring automation and varied figures of different methods, we follow ONS estimations for the UK and England, and estimations of the Brown (2019) review of digital innovation for the economy and the future of work in Wales, and integrate a gender perspective to the discussion.

²⁸ Brown P. (2019).

²⁹ Ibid.

³⁰ Quoted by ONS (2019b).

³¹ ONS (2019b), The probability of automation in England.

³² Brown P. (2019), p.21.

³³ ONS (2019b), The probability of automation in England.

³⁴ Ibid.

³⁵ Ibid.

employees in jobs at high risk of automation; only 11% of the jobs at low risk of automation are part-time.³⁶ Women's jobs and livelihoods are at greater risk than men's.

Age is also an important intersectional factor in measuring the impact of automation on the labour force. Task-based occupational analysis suggests that younger people are proportionally more likely to be in jobs at high risk of automation; 45% of the high risk jobs were held by people between the ages of 20 and 30 years.³⁷ However, the labour market is very dynamic for the younger age group and young people are likely to move into low-risk roles as their career develops. For those aged 40, the risk of automation is also greater albeit for different reasons than younger workers. Fewer opportunities for career changes, upskilling or reskilling and being overrepresented in roles at risk of automation all leave older workers more exposed to the negative impacts of automation.³⁸

Beyond protected characteristics, levels of education also affect the risk of automation. Employees with a degree are more likely to be in the low-risk roles, while those educated to GCSE and A level are more likely to be in jobs at high risk of automation.³⁹

While job losses are a significant focus in the discussion of automation and digitalisation, this transition also offers opportunities. Greater digitalisation can also lead to job creation, with many estimates about the future labour market noting that the next generation will work in jobs that don't yet exist. For example, a 2017 report by Dell Technologies and Institute for the Future (ITF) estimates that 85% of the jobs that will exist in 2030 have not been invented yet.⁴⁰ Other estimates instead focus on the likelihood that while tasks will change, and therefore the nature of some roles will be different, occupations themselves will not necessarily disappear. The Welsh Government report on Working Future 2014 to 2024, estimates that 91% of job openings in Wales, and 88% of those in the UK between 2014 and 2024 are predicted to be replacement jobs rather than 'newly created jobs'.⁴¹

The impact of automation and digitalisation goes beyond changing job roles and tasks, it has also led to a change in the way that many jobs are done, changing conventional working patterns and workplaces. As the Brown review of digital innovation in Wales pointed out, changing working patterns and increasing flexible contracts of employment, new work platforms where people work as a freelancer or self-employed, and precarious working conditions, should be taken into account when considering automation and digitalisation and the formation of the labour market.⁴²

³⁶ Ibid.

³⁷ Ibid.

³⁸ Brussevich M et al. (2019), IMF Working Paper.

³⁹ ONS (2019b), The probability of automation in England.

⁴⁰ Dell Technologies and Institute for the Future (ITF) (2018).

⁴¹ Welsh Government (2016), Working Futures 2014-2024: Summary Paper for Wales.

⁴² Brown P. (2019).

While flexible and remote working become the norm for many, digital platforms are also bringing about new business models. Online digital work platforms (such as Uber, Deliveroo and Airbnb) have affected many areas of employment and introduced new definitions of employment and work, such as 'gig-economy' and 'gig-workers'. Research from the TUC and University of Hertfordshire in 2021 Hertfordshire found out that 4.4 million people (14.7%) were working for gig economy platforms at least once a week in England and Wales, which is two and a half times bigger than in 2016 (5.8%).⁴³ The sharp increase in the numbers of working people in the gig economy (which includes taxi driving, deliveries, office work, design, software development, cleaning and household repairs) shows how fast the economy and the labour market are transforming.

Digitalisation allowed these platforms to emerge, creating the gig economy and establishing new working patterns. However, these new ways of working are far from being fair and equal. Women engage with the gig economy in different ways than men and are concentrated in traditionally female-dominated, undervalued work such as cleaning and care; whereas men are more likely to work in transport and delivery services.⁴⁴ In 2017, it was estimated that 31% of gig economy workers in the UK were women.⁴⁵ This new aspect of the labour market, made possible by digital technology, has in part contributed to more precarious and insecure work and in some areas has exacerbated existing inequality.

A growing gig economy and an increase in freelance working thanks to the opportunities that automation and digitalisation have provided have contributed to rising rates of self-employment. However, this does not always mean better, or even fair work conditions. As the Fair Work Commission in Wales report highlighted, there is a drop in the quality of work and life standards for some of the self-employed,⁴⁶ particularly for the ones working in the gig economy empowered with digitalisation.

Both the Welsh Government Fair Work Commission and Trades Unions underline that automation and digitalisation should improve both job quality and quality of life.⁴⁷ When jobs are being redesigned as a result of automation and digitalisation, other important issues should be considered including delivering a rewarding, representative and respectful work environment, job security, work-life balance, autonomy, creativity, the ability for individuals to use their skills to the full extent, and a right to be redeployed and retrain for workers at high risk.⁴⁸ This means a significant consideration and transformation in our understanding of the work and the work environment. Workers' involvement in the job

⁴³ TUC (2021).

⁴⁴ Fletcher E. (2021).

⁴⁵ Ibid.

⁴⁶ Quoted by Brown P. (2019).

⁴⁷ TUC (2020), Brown P. (2019), MacBride-Stewart S. and Parken A, (2021).

⁴⁸ TUC (2020), Unison (2018), MacBride-Stewart S. and Parken A. (2021).

designs and the process of the changes in the working environment is a significant part of a fair and just transformation in the workplace.⁴⁹

4.1.1. Women in the workforce and automation

There is limited consideration of gender equality in mainstream discussions of automation and digitalisation. While there are equality focused reports on the topic,⁵⁰ the lack of focus on equality elsewhere suggests that little consideration is being given to how existing inequalities can be addressed through automation and digitisation.

There are two areas of discussion emerging concerning gender equality and automation and digitalisation of the economy. The first focuses on the implications of automation and digitalisation on women's jobs within the existing labour market, which is already gender segregated and deeply unequal, and includes an analysis of economic structures and how automation and digitalisation will affect women's work and the sectors they work in.

The second focuses on women's engagement and participation in discussion about the future of the labour market in an automated and digitalised economy and includes consideration of the structural issues that create barriers to women accessing the newly emerging labour market. This discussion underlines the gender inequalities in the labour market that would affect women's participation in work, particularly their uptake of new jobs, and the ways in which women's engagement can be accelerated in the process of automation and digitalisation and gender equality can be achieved.

From a gender perspective, automation and digitalisation present both challenges and opportunities. They affect women and men differently as they tend to work in different sectors and occupations and often perform different tasks even in the same jobs. A research paper looking at 22 OECD countries⁵¹ found that,

Women, on average, perform more routine or codifiable tasks than men across all sectors and occupations—tasks that are more prone to automation.

Moreover, women perform fewer tasks requiring analytical input or abstract thinking (e.g., information-processing skills), where technological change can be complementary to human skills and improve labour productivity.

McKinsey Global estimates that globally an average of 20% of working women (107 million) could lose their jobs to automation compared to 21% of men (163 million).⁵² In the UK, 22%

⁴⁹ TUC Wales (2021)

⁵⁰ Brussevich M et al. (2019), Roberts C. et al. (2019), MacBride-Stewart S. and Parken A. (2021), McKinsey Global Institute (2019) along with others.

⁵¹ Brussevich M et al. (2019) p.4.

⁵² McKinsey Global Institute (2019).

of women’s full-time jobs in the UK could be displaced by 2030, compared to 24% of men’s.⁵³ However, rising demand for labour could mean 20% more jobs for women compared with 19% for men globally, assuming the existing shares of sectors and occupations hold. This is 17% for both men and women in the UK.⁵⁴

As outlined above, women and part-time workers are at higher risk of job change or job losses due to automation. IPPR research found that 64% of workers in roles with high potential for automation are women, and 36% are men.⁵⁵ Their analysis found that women are twice as likely to be in occupations with high potential for automation - 9% of working women compared to 4% of men.

TABLES 1.1 AND 1.2: WITHIN OCCUPATIONS WITH HIGH POTENTIAL FOR AUTOMATION, MEN AND WOMEN HOLD DIFFERENT ROLES

Male workers in ‘high potential’ roles

Occupation	Of men in high potential roles, what percentage are in each of the following occupations?
Farm workers	5.8%
Packers, bottlers and canners	9.9%
Cleaners and domestics	15.5%
Vehicle valeters and cleaners	3.9%
Shelf fillers	8.1%
Kitchen and catering assistants	24.4%
Waiters and waitresses	9.6%
Bar staff	11.5%
Other occupations	11.3%

Female workers in ‘high potential’ roles

Occupation	Of women in high potential roles, what percentage are in each of the following occupations?
Farm workers	1.6%
Packers, bottlers and canners	4.8%
Cleaners and domestics	36.2%
Launderers, dry cleaners	1.6%
Shelf fillers	2.9%
Kitchen and catering assistants	25.8%
Waiters and waitresses	14.1%
Bar staff	8%
Other occupations	5%

Source: IPPR analysis using Quarterly Labour Force Survey data Q1 2018–Q4 2018 (ONS 2019c)

Note: Other occupations for both men and women are: ‘welghers, graders and sorters’, ‘tyre, exhaust and windscreen fitters’, ‘sewing machinists’, ‘elementary sales occupations n.e.’, ‘leisure and theme park attendants’. For women it also includes ‘vehicle valeters and cleaners’ and for men it includes ‘launderers, dry cleaners and pressers’. These categories needed to be combined due to small sample sizes.

Source: Roberts C., Parkes H., Statham R. and Rankin L. (2019), *The Future is Ours: Women, Automation and Equality in the Digital Age*; IPPR The Centre for Economic Justice: London. Page:11

IPPR analysis also allows us to explore the intersectional aspects of automation. Both younger and older women are more exposed to automation than men of the same age. Among those aged 61-65, women in work are four times as likely as men in work to be in a

⁵³ Ibid.

⁵⁴ Ibid.

⁵⁵ Roberts C. et al. (2019).

job with a high potential of change. This risks causing a further disadvantage for older women in the workforce, who already experience significant inequality.

Women in high risk of automation occupations are slightly more likely to be from an ethnic minority background, although the ethnicity difference is more pronounced amongst men. Both male and female migrant workers are over-represented in high-risk and low-paid occupations. Migrants make up 21% of the whole female workforce in the UK and 29.3% of women in high risk occupations.⁵⁶

The composition of the job losses and job gains for women and men are also greatly gender segregated, reflecting the current gender imbalance in sectors and occupations. Service-oriented and clerical support roles could account for 52% of women’s job losses, whereas 40% of men’s job losses are expected to be in machine operation and craftwork occupations.⁵⁷ 25% of potential job gains for women are estimated in the growth of health and social care, while manufacturing could account for 25% of potential job gains for men.⁵⁸

McKinsey Global Institute report states that women’s slight advantage in job losses and job gains compared to men is derived from their high representation in health and social care sectors.⁵⁹ In the UK, women workers make up 98% of UK nursery nurses and assistants, 97% of childminders, 83% of care workers and home carers, and 80% of nursing auxiliaries and assistants.⁶⁰

In Wales, women make up 79% of the workforce in health and social care occupations.⁶¹ 27% of working women in Wales work in health and social care occupations compared to 7% of men.

Proportion of women in total workforce of health and social care sector occupations (SIC 2007) in Wales		
(612) Childcare and Related Personal Services	34,900	92%
(222) Therapy Professionals	8,000	88%
(223) Nursing and Midwifery Professionals	28,900	87%
(614) Caring Personal Services	61,800	80%
(323) Welfare and Housing Associate Professionals	22,300	78%
(118) Health and Social Services Managers and Directors	4,100	65%
(124) Managers and Proprietors in Health and Care Services	2,000	63%

⁵⁶ Roberts C. et al. (2019), p. 12-13.

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ McKinsey Global Institute (2019).

⁶⁰ Roberts C. et al. (2019) analysis of NOMIS (2018) *Workforce job by industry (SIC2007)* and ONS (2019) *Quarterly Labour Force Survey*. p.21

⁶¹ Annual Population Survey, Oct 2020-Sep 2021, *Regional - Occupation By Sex By Employment Type* via NOMIS.

(321) Health Associate Professionals	6,000	60%
(221) Health Professionals	17,000	58%

Source: Annual Population Survey, Oct 2020-Sep 2021 Occupation by sex and employment type

These predictions show us that, with the current sectoral distribution of jobs by gender, and the rising demand in the health and social care sector, proportionally women and men see similar job gains as a result of automation and digitalisation. The flipside of these estimations, however, is that women are likely to miss out on new, highly-skilled, well-paid occupations that emerge as a result of technological innovation, as they're simply not working in these areas. Women are at risk of losing out in a more automated and digital economy, as they are underrepresented in jobs that are expected to expand and are well-paid.⁶²

Women make up only 23% of science, research, engineering and technology professionals and associate professionals in Wales.⁶³ Within this occupational group, women only make up 23% of ICT Professionals and 28% of IT technicians.

ICT Occupations by SIC 2007 Codes	All	Men	% of men	Women	% of women
(1136) Information technology and telecommunications directors	2,600	2,200	85%	~	*
(2126) Design and development engineers	3,000	2,700	90%	~	*
(213) Information Technology and Telecommunications Professionals	35,000	27,000	77%	8,000	23%
(2133) IT specialist managers	7,700	5,300	69%	2,400	31%
(2134) IT project and programme managers	2,400	1,900	79%	~	*
(2135) IT business analysts, architects and systems designers	7,700	6,200	81%	1,600	21%
(2136) Programmers and software development professionals	11,200	8,700	78%	2,500	22%
(2137) Web design and development professionals	1,800	1,600	89%	~	*
(2139) Information technology and telecommunications professionals (not elsewhere classified)	4,200	3,200	76%	1,000	24%
(313) Information Technology Technicians	12,300	8,800	72%	3,500	28%
(3131) IT operations technicians	6,100	4,800	79%	1,200	20%
(3132) IT user support technicians	6,200	4,000	65%	2,200	35%

Source: Annual Population Survey, Oct 2020-Sep 2021 Occupation by sex and employment type

⁶² Roberts C. et al. (2019).

⁶³ Annual Population Survey, Oct 2020-Sep 2021, Regional - Occupation By Sex By Employment Type via NOMIS

The underrepresentation of women in this sector not only means that they are profoundly disadvantaged in the newly emerging labour market, but they are also absent from shaping the process and progress of automation and digitalisation.

In response to automation and digitalisation, workers will need to develop:

(1) the skills that will be in demand; (2) the flexibility and mobility needed to negotiate labour market transitions successfully; and (3) the access to and knowledge of technology necessary to work with automated systems, including participating in its creation.

Women will need to be skilled, flexible and mobile, and tech-savvy, and will need measures to overcome challenges in all three areas.⁶⁴

If current labour market dynamics and sectoral structures persist, and our response to automation and digitalisation is based on these structures, then it's inevitable that structural inequalities will be carried into the future. We also risk exacerbating these inequalities and further entrenching segregation in the labour market.

Changing these labour market dynamics and structures will require action to address long-established barriers that make it harder for women to enter and progress in work, and follow non-traditional career paths. Women have less time to reskill or search for employment predominantly due to the burden of unpaid care and domestic work, they are less mobile due to physical safety, poorly designed infrastructure and caring responsibilities and are at greater risk of living in poverty, including digital poverty. Women lack relatable role models in STEM sectors and occupations and find it harder to access training programmes for these sectors.

These structural barriers are critically important when developing responses to major trends in our economy. A fair transition to an automated, digital and sustainable economy cannot be achieved within the limits of the current labour market, or without the right policy interventions, that identify and address these long-standing inequalities.

4.2. Gender Equality in the digital world

4.2.1. Bias in AI

Who is involved in shaping digital technology has critical implications in how well digital technology responds to the needs of different people and how it is applied in everyday life. Men hold almost all the key positions in the development and design of digital innovation, with women and people with protected characteristics significantly underrepresented.

⁶⁴ McKinsey Global Institute (2019) p.21.

Algorithmic biases are one example of the problems that unrepresentative digital technology can cause. An AI bias is an anomaly in the output of the machine algorithms, due to prejudiced assumptions made during the development phase and process of the AI.⁶⁵ Biases that emerge in algorithms can become serious issues that cause discrimination and further exacerbates inequalities.

AI is based on data; by using data, software programmes create algorithms that allow machines to solve problems and produce outputs. Biases in AI can be a result of biases in data and/or the way that algorithms process data. Incomplete and exclusionary data and the unconscious bias of those designing AI and processing the data are the key factors that result in biased AI. Authorities on digital inclusivity underline that *“the data used to train and test AI systems, as well as the way they are designed, and used, are all factors that may lead AI systems to treat people less favourably, or put them at a relative disadvantage, on the basis of protected characteristics”*.⁶⁶

Research working on biases in digital technology identified three main types of bias:⁶⁷

- bias in understanding who the user is and how they might use the software;
- bias in the data used to enable the software, which may then deliver incorrect or biased suggestions to the user
- bias in the design of the product, making it unappealing or impractical for certain categories of users

AI biases can emerge anywhere, at any time, and might have serious discriminatory consequences. In 2015, Amazon, a leading power of automation and digitalisation at work, realised that the AI system they use for the recruitment of software developer jobs and other technical posts was not rating women. This was due to the system modelling the patterns in applications submitted to the company over 10 years, which were mostly coming from men.⁶⁸ In 2016, the leading online professional networking and career development platform LinkedIn was accused of discriminating against women as its search function was selective of men’s names over women’s names. A search for a female contact on the website yielded empty responses or suggestions asking if the searcher meant to look for a similar-looking man’s name.⁶⁹ Neither of these was the result of deliberate decisions but demonstrates how existing bias and inequality can be perpetuated through AI.

⁶⁵ Dilmegani C. (2022).

⁶⁶ Binns, R. and Gallo, V. (2019).

⁶⁷ Vorvoreanu et al, 2019; quoted by EGIE (2020) p. 69.

⁶⁸ The Guardian, 11.10.2018.

⁶⁹ Eticas Foundation (2021).

Alongside women, other underrepresented groups, particularly those with protected characteristics have been exposed to AI biases. Shockingly, in 2015, Google’s image recognition programme labelled a black couple as gorillas.⁷⁰ Another racist incident occurred with Twitter, where after modelling the answers from Twitter, a Microsoft chatbot called Tay started to use antisemitic language.⁷¹ In 2020, a BBC investigation found out that the UK passport photo checker showed bias against dark-skinned women, as the AI could not recognise the features of their faces, and their photos were twice as likely to be failed.⁷² A similar incident occurred with Uber’s facial-recognition software which repeatedly failed to recognise the faces of the dark-skinned drivers and deactivated their work permissions as a result, and ended up with drivers taking legal action over racism.⁷³

AI is increasingly being used in recruitment and recognition software. Research conducted by talent software firm Career Builder in 2017 found that some 55% of US human resource managers are keen to use AI as a regular part of their work within five years.⁷⁴ However, due to the biases likely to occur, there are worries about the fairness of recruitment processes once AI is in control.

Using AI makes many things easier, but there are significant problems with bias that can cost people their livelihoods and can accelerate abuse and control of people in their personal and professional lives. Reports of software being used to monitor people at work have emerged throughout the pandemic as more people moved to working remotely.

While we seize the opportunities presented by the use of AI and other digital technologies, we must also take action to address bias and eradicate the risk of discrimination. AI cannot be used without any accountability or scrutiny.⁷⁵ Monitoring and reporting potential biases in AI systems, appropriate legal tools and education around digital technology are all important to avoid the misuse of AI. UK anti-discrimination legislation, particularly through the Equality Act 2010, includes protection from discrimination, whether generated by a human or automated decision-making.⁷⁶ However, legal structures need to rapidly adapt to our increasingly digital world if people are to be protected and discrimination through digital technology is to be dealt with.

4.2.2. Access to the digital world: Use of IT and digital poverty

Access to the digital world matters. In an increasingly digitalised world, those who don’t, or cannot, engage in digital technologies are at risk of being excluded and left behind.

⁷⁰ BBC, 01.07.2015.

⁷¹ The Guardian, 24.03.2016.

⁷² BBC, 08.10.2020.

⁷³ The Guardian, 05.10.2021.

⁷⁴ The Guardian, 11.10.2018.

⁷⁵ The Guardian, 13.03.2017, and The Guardian, 08.09.2018.

⁷⁶ Binns, R. and Gallo, V. (2019).

Alongside the discussion of who creates, controls and manages the digital world, it is fundamentally important to map out who can use digital technologies and who has access to information and services to ensure a just transition to a digitalised economy.

Digital connection and use of the internet are reflected in the UN Sustainable Development Goals, and the Well-being of Future Generations (Wales) Act. As well as access, having the skills to confidently and safely navigate the digital world is important for an inclusive and equal future.

The Tech Partnership Basic Digital Skills framework⁷⁷ describes five basic digital skills as such:

1. **managing information:** using a search engine to look for information, finding a website visited before or downloading or saving a photo found online.
2. **communicating:** sending a personal message via email or online messaging service or carefully making comments and sharing information online.
3. **transacting:** buying items or services from a website or buying and installing apps on a device.
4. **problem-solving:** verifying sources of information online or solving a problem with a device or digital service using online help.
5. **creating:** completing online application forms including personal details or creating something new from existing online images, music or video.

To be considered to have digital skills, respondents need to be able to do one of these activities listed above.

Research carried out by the European Commission in 2018 found that women are somewhat more concerned about, and have more negative perceptions of, digital technologies.⁷⁸ Only 54% of women reported positive views about robots and AI, compared to 67% of men.⁷⁹ The survey also found that women tend to be less well informed than men about new technologies, which may contribute to their greater mistrust of them.⁸⁰

ONS research into the digital divide in the UK shows that there are still 5.3 million (10% of the adult population) people in the UK who are internet non-users.⁸¹ Lloyds Bank UK Consumer Index 2018 estimates that in 2018, 8% of people in the UK (4.3 million people) had zero basic digital skills.⁸² Worryingly, 61% of these people are women, 76% of them are aged 65+, 46% of them are low income, and 81% of them are without internet access at home, school or work. Wales has the highest proportion of people with zero basic skills among other regions of the UK with 19% compared to 7% in Scotland, 12% in North East and

⁷⁷ ONS (2019a).

⁷⁸ EIGE (2020).

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ ONS (2019a).

⁸² Lloyds Bank (2018).

10% in North West England.⁸³ While 79% of the UK's population has achieved full basic digital skills, Wales is well below the average of the UK with 66%; 34% of the Welsh population yet to achieve all five digital skills.⁸⁴

The digital divide raises significantly for disabled people. 25% of disabled people are offline compared with 6% of the UK population.⁸⁵ Lack of interest, confidence and support are among the barriers to access to the internet for disabled people.⁸⁶

The ethnicity gap in internet usage has narrowed over time due to the decline of the proportion of non-internet users. The percentage of internet non-users by ethnic group in 2018 was⁸⁷:

- White 10.6%
- Mixed and multiple ethnic backgrounds 1.8%
- Indian 7.2.%
- Pakistani 5.7%
- Bangladeshi 8.0%
- Chinese 1.8%
- Other Asian backgrounds 2.9%
- Black, African, Caribbean, Black British 8.2%
- Other ethnic groups 4.3%.

Unsurprisingly as household income increases, so do levels of basic digital skills. Households with earnings higher than £40,000 per year are 47% more likely to have full basic digital skills.⁸⁸ While 99% of households with an income of over £40,000 have internet, this drops to 51% for households earning between £6,000-£10,000.⁸⁹ Almost 18% of working-age benefit claimants in the UK (19% in Wales) have low or no digital capacity.⁹⁰ However, research also shows that low-income groups are more likely to see the benefits of being online. They are more likely to say that it helped them find a job (13%), feel less alone (46%), manage and improve their health (11%), and feel part of a company (29%).⁹¹

It is known that many elderly people do not have internet access, a higher percentage of lone households with an adult aged 65+ don't have an internet connection (41%) but the

⁸³ Lloyds Bank, (2018) P.20. Proportion of regional population with zero Basic Digital Skills: East England 8%, East Midlands 9%, London 6%, North East 12%, North West 10%, South East 5%, South West 9%, West Midlands 9%, Yorkshire & Humberside 6%, Scotland 7%, Wales 19%

⁸⁴ Ibid. p.32.

⁸⁵ Ibid.

⁸⁶ Ibid. p.35

⁸⁷ ONS (2019a),.

⁸⁸ Lloyds Bank (2018).

⁸⁹ ONS (2019a).

⁹⁰ Lloyds Bank (2019).

⁹¹ Ibid.

digital divide and digital exclusion are not only an age-related or generational issue.⁹² ONS analysis found that those who live alone aged between 16 and 64 years are less likely to have an internet connection at home (9%) compared with only 1% of households with two adults aged between 16 and 64 years.⁹³

The most common reason provided for not having internet access in the house was that they didn't need the internet as it is not useful or not interesting etc. (64%). Lack of skills (20%), having access to the internet elsewhere (12%), high cost of equipment (8%), high cost of access to telephone broadband subscription (8%), privacy and security concerns (7%) and physical or sensorial disability (2%) are among the reasons cited for not having an internet connection.⁹⁴ In the face of the cost of living crisis, the cost of digital technology and internet access could become a bigger issue.

This has important implications for digitalisation and automation. Any service that is upgraded to rely more on digital technology must consider digital exclusion. For example, digitalisation of doctor appointments could create accessibility issues for people aged 65 and over and disabled people, as they are less likely to be online. Like many public services, such as healthcare, social security and education are going online, as well as many job applications, those who are unable to engage digitally could be left more vulnerable to poverty and exclusion.

Digital poverty and inequality, defined as *“the inability to interact with the online world fully, when where and how an individual needs to”*⁹⁵ is a growing concern during this fourth industrial revolution.

The Covid-19 pandemic drew attention to the difficulties some experience in accessing the digital world, and also intensified the digital divide. It is estimated that 25% of school-age children do not have access to a suitable device for learning in the UK, and 50% of those who are between aged 12 and 15 have had a negative experience online.⁹⁶ Child Poverty Action Group's research exploring the experience of parents in the first lockdown shows that 40% of households did not have access to a laptop or the internet, but also to other essential items for home learning, such as printers, stationery, and craft materials.⁹⁷

⁹² ONS (2019a).

⁹³ ONS (2019a).

⁹⁴ ONS Internet Access, Opinions and Lifestyle Survey (OPN), quoted in ONS (2019a).

⁹⁵ Digital Poverty Alliance, <https://digitalpovertyalliance.org/>

⁹⁶ Ofcom (2021).

⁹⁷ BBC 11.01.2021.

4.3. Preparing for a just transition

Automation and digitalisation are significantly changing our economy, labour market and day-to-day lives. This transformation is not gender-neutral. Women face different risks of job losses and job changes brought about by automation and they are missing from the sectors that are likely to see growth in skilled, well-paid roles as a result of digitalisation.

The impact of automation and digitalisation on men and women differs as the labour market is heavily segregated by gender. Women work in jobs that are more prone to automation and face greater and different risks of job losses and job changes as a result of automation and digitalisation.

Women are also disadvantaged in accessing re/up-skilling opportunities which would provide them to adapt to the changes at work. Women are also missing from the sectors that are likely to see growth in skilled, well-paid roles as a result of digitalisation.

Wider use of digital technology has also gendered consequences. Digital technology, including AI, is biased, partly due to the lack of women in development and decision-making roles in the digital sector. Therefore without intervention, our increasing reliance on AI risks entrenching inequality. There is a clear need for agreed industry standards around digital innovation, including AI, to ensure issues of equality, bias and inclusion are properly understood and addressed. These will need to be agreed upon globally but should cover the needs for unbiased data, robust testing with diverse groups and rigorous procedures for responding to identified biases.

Access to digital technology, in terms of digital skills and poverty, are also gendered, which risks leaving vulnerable groups behind as more of our day-to-day lives move online. Digital/data poverty is a growing concern that risks leaving vulnerable groups behind and deepening inequalities. As more of our day-to-day lives move online, access to digital technologies becomes more critical for engaging in social and economic life.

The changes that occur in response to automation and digitalisation don't have to be gender-blind, however. By taking account of the gendered nature of our economy and society, and by considering the potential impacts fully, we can ensure that our response to these major economic trends tackles inequality and contributes to a just transition.

There is a gap in public policy in Wales in terms of responding to automation. While some analysis has been carried out in Wales in terms of responding to automation in the Brown

Review⁹⁸, there remains a need to translate this analysis and any recommendations into a comprehensive policy response, that mainstreams equality.

Recommendations:

- 1) Welsh Government should require employers to carry out an analysis/ evaluation of the equality impacts of automation within their workplace every 2 years. This analysis should be published.
- 2) Welsh Government should pilot a programme for career switchers moving into digital, with a focus on women and other under-represented groups in digital jobs.
- 3) Welsh Government should create a clear apprenticeship pathway into digital, up to degree-level qualifications. This pathway should be accompanied by targeted action to engage more women and other under-represented groups with digital.
- 4) The UK Government should monitor and report on issues of bias in AI and digital technology:
 - a) A clear reporting system should be created for people to report bias.
 - b) Data on bias should be reported publicly to help understand the scale of digital bias and inform improvements to research, development and evaluation of digital innovation.
- 5) Welsh Government should ensure that digital skills plans in Wales articulate a baseline level of digital skills, a target of the proportion of the population that should reach this baseline and a deadline for when this target will be reached.
- 6) The UK Government should recognise broadband as an essential utility, in-line with electricity, gas and water, and put in place the relevant regulation to ensure all households have access to affordable broadband.
- 7) Local Government should ensure access to digital equipment by:
 - a) Ensuring that all community hubs and schools have adequate equipment.
 - b) Implementing schemes to recycle and repurpose old digital equipment for those on low incomes.

⁹⁸ Brown P. (2019).

5. Transition to a Green Economy

Climate change, led by human activity, is perhaps the most defining problem of our times, that will have serious impacts on future generations. In a nutshell, climate change means the rapid change in the average climate on earth due to the release of greenhouse gases (mostly carbon dioxide (CO₂)) into the atmosphere on an extensive level by human activities, which are then trapped in the atmosphere and cause rising temperatures.⁹⁹ Scientists warn that global warming needs to stay below 1.5°C by 2100¹⁰⁰; however, if we continue as it is, the temperature rise could exceed 4°C, meaning irreversible consequences for the planet.¹⁰¹ As a result of rapid changes in the conditions, climate change is reconceptualised as a *climate emergency*, *crisis* or more recently, *climate disaster*.

In Wales, climate change has led to an increase in flooding, droughts, and temperature fluctuations, with direct effects on almost all aspects of life, and more are expected.¹⁰² Climate Central predicts that if the current way of living continues, in less than 100 years, large parts of Cardiff, Newport, Swansea, Prestatyn and Llandudno will be under water.¹⁰³

Climate change is an emergency. Global action is needed immediately to tackle it and achieve the targets. According to the UN's Emissions Gap Report 2019¹⁰⁴, to prevent warming beyond 1.5°C, we need to reduce emissions by 7.6% every year from this year to 2030; yet, this ratio can increase as the delay in taking actions might cause more disastrous scenarios. The UN's Emissions Gap Report 2019 underlines that if countries had acted according to science ten years ago, the ratio would have been 3.3% each year.¹⁰⁵

In 2015, in Paris, 196 Nations agreed to reduce their carbon emission and keep the global temperature rise below 2°C and produced the legally binding Paris Agreement.¹⁰⁶ Each nation needs to submit a 5-year plan and nationally established contributions (NDCs) for climate action, including significant economic and social transformation.¹⁰⁷

However, the focus of many government strategies is the **decarbonisation** of their economies, not on the economics of social transformation. This approach to tackling the climate emergency is criticised as it focuses on technological fixes and achieving carbon

⁹⁹ Some of the major causes for rising greenhouse gas emissions are burning coal, oil and gas; deforestation, increasing livestock farming, fertilisers containing nitrogen and fluorinated gasses. (BBC, 13.10.2021; European Commission)

¹⁰⁰ European Commission, Causes of Climate Change.

¹⁰¹ BBC, 13.10.2021.

¹⁰² Climate Change Committee (CCC) (2020).

¹⁰³ Climate Central, Coastal Risk Screening Tool.

¹⁰⁴ UN Environment Programme (2019)

¹⁰⁵ Ibid.

¹⁰⁶ UN Climate Change, The Paris Agreement.

¹⁰⁷ Ibid.

targets, rather than a comprehensive transformation in the way economies and societies are organised.¹⁰⁸

Tackling the climate crisis needs more than the decarbonisation of the most polluting sectors and the search for a technological fix. We need a substantial transformation and reorganisation of the current economic system to effectively tackle climate change and respond to the consequences of the climate crisis.

The economy is already in a process of sizeable transformation due to automation, digitalisation and climate change. In the last two years, the shock of the Covid-19 pandemic has given additional pace to this transformation and added a new consideration – ‘recovery’. As we emerge from the crisis, the discussion is moving to focus on a *green recovery*.

Public awareness and concern about the climate emergency have increased and discussion of a green recovery is gaining traction. At the UN Climate Change Conference (COP26)¹⁰⁹ in Glasgow, some governments, including the Welsh Government, demonstrated how they have placed the ‘green economy’ at the heart of their policies. It remains to be seen how comprehensively this approach is embedded in the action of governments, whether action will focus on driving an effective social and economic transition and the extent to which equality is mainstreamed into these programmes.

Climate change affects everybody, but the level of impact on people’s lives and different nations varies due to existing inequalities. Neither climate change, nor policies developed to tackle it, are experienced in the same way. Even though the poorest and most marginalised nations and populations are the least responsible for the production of greenhouse gases, they are more likely to be exposed to the negative effects of climate change, more vulnerable to the damaging consequences of climate change, and they have much more limited access to the resources needed to respond, cope and recover from the impact of the climate crisis.¹¹⁰

Inequalities must therefore be placed at the heart of an effective strategy for tackling climate change and its impact on people, communities and places. However, discussion of inequality is incredibly limited if present at all in many climate change policies and strategies.

¹⁰⁸ Cohen M. and MacGregor S. (2020)

¹⁰⁹ The UK hosted the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow on 31 October – 13 November 2021. The COP26 summit brought parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. (UN Climate Change Conference, UK 2021).

¹¹⁰ Markkanen and Anger-Kraavi, 2021. Quoted by MacBride-Stewart S. and Parken A. (2021).

For Wales, a ‘green recovery’ is a fundamental and foundational target of policy-making. ‘A greener economy’ was included as one of three core objectives in the previous Welsh Government’s Economic Resilience and Reconstruction Mission in 2021.¹¹¹ Since the 2021 Senedd election, there is now a Minister for Climate Change, and one of Welsh Government’s ten well-being objectives is to embed “*our response to the climate and nature emergency in everything that we do*”.¹¹²

In *Our Economic Resilience and Reconstruction Mission* a green recovery was defined as:

A greener economy demands high levels of circularity, where resources are kept in use adding economic value and where waste is avoided. This can create jobs and skills opportunities in new industries from renewables to repair. This economy is integral to a low carbon society, so we will invest in low-carbon and climate-resilient infrastructure, nature-based solutions, renewable energy projects and sustainable homes.¹¹³

Placing the green economy at the centre of Wales’ economic programme has been a key step to achieving a greener future. However, as we discuss in the later stages of this report, the definition of the green economy in the government’s document lacks the social and ecological aspects of a green economy due to a focus on decarbonisation of high polluting sectors. The report by The New Economics Foundation (NEF) for the Future Generations Commissioner for Wales (FGCW) defines the green recovery as “*delivering good quality livelihoods whilst supporting rapid decarbonisation and improving biodiversity in Wales*” and includes improving people’s livelihoods and biodiversity alongside decarbonising the economy.¹¹⁴ This definition is not fully reflected in the current policies and the strategies around transitioning to a green economy in Wales.

A green economy that aims to stop the climate crisis by decarbonising polluting sectors, improving people’s livelihoods, reducing the use of fossil fuels and protecting biodiversity, needs major transformation in economic and social structures.¹¹⁵ Decarbonisation is just one leg of the transition to a green economy. If decarbonisation becomes the main or only focus of the discussion and resources are only channelled towards decarbonisation, there is a risk that other legs of the transition might be undermined, people and communities might be left behind, and inequalities may be entrenched.

¹¹¹ Welsh Government (2021b), *Our Economic Resilience & Reconstruction Mission*. Well-being economy in this policy is defined as “*driving prosperity, environmentally sound, and help everyone realise their potential.*” (p. 6). The other two outcomes alongside the green economy, to pursue the vision of a well-being economy are a prosperous economy and an equal economy.

¹¹² Welsh Government (2021c), *Programme for Government*.

¹¹³ Welsh Government (2021b) *Our Economic Resilience & Reconstruction Vision*.

¹¹⁴ Chapman A. and Kiberd E. (2021) p.17.

¹¹⁵ Chapman A. and Kiberd E. (2021) and Cohen M. and MacGregor S. (2020).

5.1. Women affected disproportionately by the climate crisis

The impacts of the climate crisis and environmental degradation are unevenly distributed across the world, and disproportionately affect women, particularly those living in low-income, developing nations.¹¹⁶ UN Women's report on a feminist green recovery after the Covid-19 pandemic highlights that

Women's reliance on agriculture, fisheries and forests for subsistence or employment in many contexts—and their primary responsibility for household food, water and fuel provision—means that land degradation, deforestation, water scarcity and pollution intensify their paid and unpaid workloads and increase their risks of poverty and hunger, against which they typically have fewer resources to buffer the impacts.¹¹⁷

Women are more likely to die in a climate disaster, be displaced by climate change, or die from pollution.¹¹⁸ They are not inherently more vulnerable to the impacts of climate change but intersections between socio-economic structures, gender inequalities, power dynamics, socio-economic norms and gender roles mean that the impacts of the climate crisis are experienced very differently by women.¹¹⁹

Access to assets and resources, gender-based differences in time use, access to financial resources and employment differences all constrain women's opportunities, create social, economic and political barriers and contribute to poverty among women.¹²⁰ As a result, women are disadvantaged when coping with the adverse impacts of the climate crisis.

A number of other factors leave women at particular risk. Climate change is the result of an economic system that is rooted in *“colonial and extractivist models of economic growth, in which relentless pursuit of wealth and power entrenched the exploitation of natural resources and Indigenous communities seen across the world today”*.¹²¹ This economic model, and the power relations both in and around it, also created and expanded racial and gender inequalities. Feminist scholars have persistently made the link and similarity between the treatment of women's and racialised groups' labour and the treatment of the natural environment in this economic system. The labour of women and racialised groups is undervalued, and the reproductive labour of women (care work) is taken for granted and

¹¹⁶ In different places, women experience the impact and burden of the climate crisis differently. In some places, mostly in the Global South, habitats, livelihoods, cultures are disappearing and many people are on the verge of becoming climate refugees, whereas in some places, the immediate danger of climate crisis is not observed in everyday life and life carries on as usual for many. As this report focuses on Wales, the discussion of the impact of the climate crisis on women is narrowed to highlight the context in Wales.

¹¹⁷ UN Women (2021), p.10.

¹¹⁸ UN Development Programme (UNDP) (2016).

¹¹⁹ Djoudi H. et al. (2016), and Andrijevic, M. et al. (2020)

¹²⁰ UNDP (2016).

¹²¹ UN Women (2021), p. 52.

often remains unpaid. This economic system also has put ‘humankind’ (or ‘mankind’) superior to nature.¹²²

Another factor that leaves women more vulnerable to the impacts of the climate crisis is that women still do not have full agency in policy and decision making.¹²³ A lack of influence in decision making results in the absence or limited focus on how to address women’s needs. As a consequence, many climate change policies and programmes are gender-blind, failing to consider the needs, challenges and priorities of women and ignoring gendered structures and roles in society.

The focus on decarbonisation in the green economy plans also restricts the emergence of potential democratic participation mechanisms and provokes the alienation of people from the green economy transition, as it establishes a technical approach that is difficult for many, particularly those outside of the identified industries, to engage with.

Yet, women play a pivotal role in natural resource management and other productive and reproductive activities at the household and community levels.¹²⁴ There is a growing discussion that, women are more concerned and more likely to act in response to the climate crisis. Existing gender inequalities are resulting in a new ‘eco gender-gap’, whereby caring for the environment is increasingly gendered, and gender stereotypes are evident in who takes responsibility for household changes. Women are, for example, portrayed as caregivers, not only for their personal circle but also for the community and the planet as well.¹²⁵

Women more commonly bear the responsibility of care and unpaid labour in their personal spheres, they are disproportionately responsible for their domestic spheres and making choices about household consumption. Unsurprisingly, they are also increasingly taking on the costs of the ecological crisis as well as measures to redress it.¹²⁶ More often than not, ‘green, eco-products’¹²⁷ are marketed to and bought by women and women spend more time and money to find these products.¹²⁸ By trying to find and use eco-friendly products, women shoulder the burden of responsibility for necessary changes in day-to-day life to tackle the climate disaster. 2018 market research shows that 71% of women in the UK try to live more ethically compared to 59% of men.¹²⁹ A report by two zero-waste company, who

¹²² Ibid.

¹²³ UNDP (2016).

¹²⁴ UNDP (2016).

¹²⁵ Guardian, 06.02.2020.

¹²⁶ Cohen M. and MacGregor S. (2020).

¹²⁷ Such as green menstrual products, plastic-free cosmetics, kitchen wares, non-toxic cleaning products or biodegradable nappies...

¹²⁸ The Guardian, 06.02.2020.

¹²⁹ Mintel (2018).

use gender-neutral marketing, says about 90% of their customers are women.¹³⁰ This ‘feminisation of environmental labour’¹³¹ leads to, at the very least, time poverty for women and an increased mental load.

Furthermore, eco-anxiety, also known as climate anxiety, is a larger concern among women than men. A poll by YouGov poll of 2100 Britons ahead of the COP26 summit in 2021, shows that 78% of people have some level of eco-anxiety.¹³² Even though there are some speculations that eco-anxiety is more widespread among (upper) middle class people and young people, the poll shows that the biggest difference in levels of eco-anxiety was not between rich and poor or young and old but between men and women: 45% of women participants reported a high level of worry about climate change compared to 36% of men. Another study reviewing the use of eco-anxiety in scientific literature highlights that females and those in younger age groups were more distressed overall about climate change than males and those over the age of 35 years.¹³³

Despite the significant impact of climate change on women at all levels plans and programmes for a green economy, or green recovery do not consider or address gender inequalities, “*misogyny or male privilege*”.¹³⁴ In their manifesto for a Feminist Green New Deal, the UK Women’s Budget Group (WBG) and Women’s Environmental Network (Wen.) criticise the absence of understanding of gender inequalities in the Green New Deal plans and state that a green new deal should be feminist and committed to social justice:

The very framing of the plans as a ‘Green New Deal’ (and sometimes a ‘green industrial revolution’) mirrors historic drives of investment and transformational change directed primarily at industry. These historical events assisted progress in many areas of public life, but also gave rise to gendered norms of the male worker-breadwinner and female housewife, both of which remain embedded to some extent in Western/Anglo-European culture. From a feminist perspective, it is essential to balance the emphasis on decarbonising the economy with the stated commitment to redressing social injustice, and this requires both awareness of and strategies for changing gender norms and stereotypes.¹³⁵

¹³⁰ The reports of Plastic Freedom and Package Free Shop zero-waste companies quoted by the Guardian, 06.02.2020.

¹³¹ Farbotko, C. (2019); quoted by Cohen M. and MacGregor S. (2020).

¹³² The Guardian. 31.10.2021.

¹³³ Coffey, Y., Bhullar, N. et al. (2021)

¹³⁴ Cohen M. and MacGregor S. (2020).

¹³⁵ Ibid. p.17.

5.2. Industrial actions towards a green economy and gender equality

Current industrial strategies for transitioning to a green economy tend to focus on the decarbonisation of high-carbon sectors such as energy, manufacturing and transport, which are among the main polluters. This approach pays little to no attention to those sectors of the economy that are already relatively green, such as health and social care or education, sectors that are also important parts of the foundational economy.

The decarbonisation of high-carbon sectors means replacing the polluting means in these sectors with green alternatives, and reducing the use of fossil fuels and polluters wherever possible. In the process of decarbonisation, while there will be job losses and significant changes in the description of jobs currently available, it is estimated that a transition to a green economy will also create many jobs.¹³⁶

In the current economic thinking, 'decarbonising the economy' mostly refers to the decarbonisation of energy, transportation, manufacturing and housing/construction sectors by using large scale public and private investment.¹³⁷ Wales TUC suggests that, with £6 billion public investment in 16 infrastructure projects in digital, manufacturing, transport, housing/construction, energy, and land use and natural resources sectors, fifty nine thousand jobs can be created in the short-term in Wales.¹³⁸ The breakdown of jobs that the Wales TUC package suggests follows as:

- 27 thousand jobs in housing construction and energy efficiency retrofits
- 18 thousand jobs in transport upgrades
- 9 thousand jobs in energy, manufacturing, and broadband infrastructure upgrades
- 5 thousand jobs in land, forestry, and agriculture improvements.

Research by London School of Economics exploring a just transition in the UK suggests that around 20% of the jobs in Wales have direct exposure to the shift to a green, zero-carbon economy.¹³⁹ 10.3% of these jobs (appx. 150,000) are "transition aligned", meaning that they will be adaptable to the green economy; but, an estimated 9.6% of the jobs (140,000) will need some form of upskilling or reskilling.¹⁴⁰ The sectors most affected by the green transition include construction (30%), transport (26%) and manufacturing (17%). 73% of the jobs in these sectors are in need of some sort of reskilling according to reports.¹⁴¹

¹³⁶ Chapman A. and Kiberd E. (2021).

¹³⁷ Cohen M. and MacGregor S. (2020), MacBride- Stewart S. and Parken A. (2021).

¹³⁸ Wales TUC (2020).

¹³⁹ Grantham Research Institute on Climate Change and the Environment (2019).

¹⁴⁰ Ibid. p.5

¹⁴¹ Ibid. and Grantham Research Institute 2019, and Chapman A. and Kiberd E. (2021).

The skills gap in these sectors makes it urgent to upskill the existing workforce and rapidly expand the workforce in these sectors.¹⁴² These sectors are, however, historically dominated by men and there is a significant gender gap.

Workforce jobs by industry (SIC 2007) and gender, 2020-21

Industry	Male	Female	Total	Male %	Female %
A: Agriculture, forestry and fishing	27,330	12,158	39,488	69.2%	30.8%
C: Manufacturing	112,625	34,397	147,022	76.6%	23.4%
D: Electricity, gas, steam and air conditioning supply	4,175	1,740	5,915	70.6%	29.4%
E: Water supply; sewerage, waste management and remediation activities	8,474	3,876	12,350	68.6%	31.4%
F: Construction	87,687	12,554	100,241	87.5%	12.5%
H: Transportation and storage	42,473	10,418	52,891	80.3%	19.7%
J: Information and communication	21,912	10,725	32,637	67.1%	32.9%
M: Professional, scientific and technical activities	37,651	41,977	79,628	47.3%	52.7%
Total	342,327	127,845	470,172	72.8%	27.2%

Source: Annual Population Survey July 2020-June 2021

Looking at student enrolments, it's clear that these sectors are not noticeably on the radar of the next generation of women either.

Table: Student enrolment in higher education by gender 2019-20

	Females		Males	
	% in females	%in total	% in males	%in total
All subjects	100.0%	56%	100.0%	44%
Physical sciences	2.1%	42%	3.7%	58%
General and others in sciences	0.1%	49%	0.2%	51%
Mathematical sciences	0.8%	37%	1.7%	63%
Engineering and technology	2.1%	17%	13.4%	83%
Computing	1.7%	17%	10.7%	83%
Geographical and environmental studies	1.4%	50%	1.9%	50%
Architecture, building and planning	1.3%	42%	2.3%	58%

Source: StatsWales, Student enrolments in Wales by HECOS subject, level and mode of study.

The gender segregation evident in the sectors at the centre of decarbonisation plans will mean that men will likely benefit to a far greater extent from investment in training and emerging job opportunities as we transition to a green economy. In the short to medium term, we must see action taken to tackle gender stereotypes and engage with women and other underrepresented groups in these sectors to create employment pathways and close gender and skills gaps. However, we must also look at longer-term plans to tackle structural

¹⁴² Chapman A. and Kiberd E. (2021).

inequalities in our society and economy. Any plan for a green recovery and green transition must also play a part in breaking down these long-standing barriers and inequalities. It's not enough for green strategies to merely mitigate negative gender impacts, they must also pursue equality as a goal in and of itself.

5.2.1. Embracing agroecology in Wales

The ways food is produced, processed, packaged, transported, traded, sold, consumed and wasted has an enormous impact on the environment and the people along the chain, from farm to fork. And according to scientists and many farmers, this impact is negative – for our climate, soil, water and biodiversity, for rural livelihoods and for our health.¹⁴³

The agriculture and food sector is one of the most polluting and high-carbon sectors. The food industry is responsible for almost 26% of global carbon emissions.¹⁴⁴ Animal farming itself constitutes 15% of all carbon emissions globally.¹⁴⁵ According to the Climate Change Committee report, Wales has a significantly higher proportion of carbon emissions from agriculture (16%) compared to the UK(10%).¹⁴⁶ Without a doubt, alongside many carbon emission high sectors such as manufacturing, the agriculture and food sector must be transformed for a greener future.

The agriculture sector has historical importance in the Welsh economy and social life, despite being a relatively small contributor to Wales' GVA (1%). In this socially and historically important sector, women's labour and their relation with the environment are often ignored. According to official statistics, women make up 30.8% of the agriculture workforce.¹⁴⁷ Women have been always working on farms, but given the low percentage of women as landowners and business owners their labour is often invisible in the agricultural industry. Even the headline farming figures in Wales for 2021 do not include any data disaggregated by gender, which makes it harder to read the condition of women farmers in Wales.¹⁴⁸

There is a growing interest in farming among women in Wales. In 2021, Aberystwyth University announced that for the first time in the history of the institution, women make up the majority of students studying agriculture.¹⁴⁹ In the 2019-20 academic year, women made up 63% of students enrolled for a degree programme on agriculture and food related

¹⁴³ Mindegaard A. (2020).

¹⁴⁴ Cohen M. and MacGregor S. (2020).

¹⁴⁵ Mindegaard A. (2020).

¹⁴⁶ Climate Change Committee (2020).

¹⁴⁷ Annual Population Survey, Sector (SIC 2007) statistics, July 2020-June 2021.

¹⁴⁸ StatsWales (2021).

¹⁴⁹ Aberyswth University (2021).

studies.¹⁵⁰ Furthermore, women make up 52% of apprentices in the agriculture sector.¹⁵¹ With growing interest in agriculture among women, there could be an opportunity to engage more women in the sector, particularly in relation to the sector's transition to net zero.

Agroecology is an alternative way to conventional industrial farming, which presents a greener, low carbon option. Food and Agriculture Organisation of the United Nations (FAO) defines agroecology as:

a holistic and integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of sustainable agriculture and food systems. It seeks to optimize the interactions between plants, animals, humans and the environment while also addressing the need for socially equitable food systems within which people can exercise choice over what they eat and how and where it is produced.¹⁵²

Agroecology has proven benefits for small-scale farmers, particularly women, supports food security and protects biodiversity and ecosystems.¹⁵³ *“With low start-up and production costs, climate-resilient techniques and stable yields, agroecology is more affordable and less risky for women small-scale farmers than agricultural approaches that require large amounts of land and ongoing investments in costly inputs.”*¹⁵⁴

Investing in agroecology, with a focus on women and equality, alongside steps to address gender inequality in the agricultural sector, could be an important step towards a green and just economy in Wales.

5.2.2. Care as a green sector

An important criticism of feminist scholars and activists of current green economy plans is the absence of care (both paid work in the care sector and unpaid care and domestic work) as a part of a green new deal strategy.¹⁵⁵ It is argued that investing in a caring economy would achieve gender equality, the well-being of future generations, and care for the planet. A caring economy can reduce the social and ecological costs of privatised care by reframing care as an area that everyone is responsible for, where care is distributed fairly within society and organised in ways that enable efficient use of time and material resources and minimal waste.¹⁵⁶

¹⁵⁰ StatsWales, *Student enrolments in Wales by HECOS subject, level and mode of study*.

¹⁵¹ StatsWales, *Work-based learning programmes by age group, gender and programme type*

¹⁵² UN FAO, Agroecology Knowledge Hub.

¹⁵³ UN Women, 2021.

¹⁵⁴ UN Women, 2021, p. 57.

¹⁵⁵ Cohen M. and MacGregor S. (2020) and UN Women (2021).

¹⁵⁶ Cohen M. and MacGregor S. (2020).

Feminist ecologists and activists underline that both paid and unpaid care work are at the heart of a green transition and that the care sector is already a low carbon sector. The formal care sector not only creates jobs for many, but is also fundamentally embedded in the well-being of us all. With the Covid-19 pandemic, the importance of and need for care became much more visible. Whether it's care for the elderly, children, or communities, the demand for care will never diminish.

Investing in care, however, does not mean investing only in professional care services. Feminists from all backgrounds have been long campaigning for the recognition of the value of unpaid care and domestic work, and their central role in the reproduction of social and economic structures and systems.¹⁵⁷ A caring economy, in this framework, does not only cover professional care services and care as an economic sector, but all the care work that anyone gives to and receives from one another, and the environment in which we live.¹⁵⁸ In a caring economy, rather than being *“a commodity, a personal choice or family obligation, care would be treated as a collective good that is adequately resourced and regulated to ensure continued supply and quality as well as decent pay and working conditions for paid care workers.”*¹⁵⁹

As the *Call for Action* by the UK Women's Budget Group pointed out, investing in care achieves many goals at the same time:¹⁶⁰

investment in paid care services improves wellbeing through ensuring that people's care needs are met; it improves gender equality because it raises the overall employment rate and reduces the gender employment gap (which are particularly crucial as we seek to counter the looming jobs crisis), and it is sustainable because care jobs are green.

An estimate published in 2020 by the UK Women's Budget Group shows that any investment in care in the UK would produce *“2.7 times as many jobs as an equivalent investment in construction: 6.3 times as many jobs for women and 10% more for men”*.¹⁶¹

¹⁵⁷ In the scholarly literature, care work is conceptualised in 'social reproduction'(SR). In a nutshell, social reproduction is the daily and generational reproductive labour that reproduce social structures and system sustaining human life including economic life. Feminist scholar Susan Ferguson underlines that social reproduction theory *“insists that our understanding of capitalism is incomplete if we treat it as simply an economic system involving workers and owners, and fail to examine the ways in which wider social reproduction of the system—that is the daily and generational reproductive labor that occurs in households, schools, hospitals, prisons, and so on—sustains the drive for accumulation.”* (Quoted in Mapping Social Reproduction Theory by Bhattacharya T. in *Social Reproduction Theory: Remapping Class, Recentering Oppression* (ed. Bhattacharya, T.), Pluto Press.)

¹⁵⁸ WBG (2020).

¹⁵⁹ UN Women 2021, p.12.

¹⁶⁰ WBG (2020), p.3.

¹⁶¹ De Henau J. and Himmerweit S. (2020) p.2.

The Covid-19 crisis showed that care is a substantial part of social and economic life; but, the care system in the UK is under massive pressure. Accepting care as a green sector and investing in the care system is not only an opportunity to recover from the economic impacts of Covid-19, but also a major step towards a greener economy that is focused on well-being. Such investment must ensure the creation of better jobs, where the working conditions and pay for care workers are greatly improved, and further support the sector to contribute to net zero aspirations.

Plans for a just transition, for a net zero and green economy must carefully consider what we mean by 'green jobs'. Strategies must look beyond just the decarbonisation of high-polluting industries, and consider how other vital sectors, such as care, are part of the economy we are trying to build. From a gender equality perspective, a failure to properly consider care as part of this economic transformation would likely further entrench inequality and risk further excluding women from the economy.

5.3. For a feminist green economy...

All around the world, governments, business leaders and individuals are rightly taking action to respond to the climate crisis. Without significant change, life as we know it will cease. Key to our response to the climate crisis is the question of a green economy. This is a question that requires more than tinkering around the edges of our fundamentally broken economic approach; it requires an overhaul of orthodox economic thinking that is rooted in growth and ignores well-being and equality.

We need an economic transformation, that starts with basic questions about what the economy is for.¹⁶² If the main aim of the economy is to achieve the well-being of future generations and the planet, or is to support *'the flourishing and survival of life'*¹⁶³ - as feminist economists have long argued, rather than perpetuate creation of wealth for a minority of individuals and countries, then economic policies need to align with social and environmental goals including gender equality, sustainability and social justice. This new economic approach *"would stop treating unpaid care work and the environment as limitless resources that can be used for free and depleted without cost of consequences."*¹⁶⁴

This transformation of our economy must deliver fairly for all and must tackle deep-rooted inequalities that mean women are being affected to a greater extent by the negative impacts of the climate crisis and the policies and actions to reduce emissions, while also being less likely to benefit from government investment, emerging jobs and training created

¹⁶² UN Women (2021).

¹⁶³ Ibid. p. 11-12.

¹⁶⁴ Ibid. p. 12.

as a result of net zero action. A lack of women in decision-making roles, poor democratic processes around climate action, underrepresentation of women in sectors that are the focus of decarbonisation plans and burden of unpaid work falling to women entrenches gender inequality further.

Government climate strategies too often ignore inequality as an issue and have too narrow a focus on decarbonisation of dirty industries and therefore fail to consider how other vital sectors, such as care, feature in a green economy.

Recommendations:

- 1) Welsh Government should create a clear career pathway into Green STEM jobs, that is focused on supporting women and under-represented groups. This pathway should include improved careers advice and guidance, recognised qualification pathways, training and a clear apprenticeship framework.
- 2) Welsh Government should work with Welsh HEIs to create a qualification in agro-ecology, to support greener agricultural processes and engage more women in the rural economy.
- 3) Welsh Government must adopt a broader definition of a “green economy” that moves beyond decarbonisation to consider a genuinely low carbon Wales, and how this links to the foundational and well-being economy.
- 4) Welsh Government must invest in the care sector to support a shift to even greener ways of working and deliver good, quality jobs.
- 5) Welsh Government should unlock the potential of retrofitting homes to deliver social justice by:
 - a) Prioritising homes in the most disadvantaged communities to address issues of fuel poverty;
 - b) Set a target for a proportion of all jobs and training opportunities created through the retrofit programme to be filled by women and other groups under-represented in the construction industry.
- 6) Welsh Government and Local Government should commit to democratising decision-making about climate change and the transition to a green economy, including greater use of citizen assemblies and other inclusive engagement tools.
- 7) Employers should consider the equality impacts of changes to workplace policy and practice to transition to greener ways of working.

6. Intersectional Gender Equality Analysis of Welsh Government Policies

As outlined throughout this report the issues of digitalisation and the transition to a green economy demand a comprehensive response from governments. If left unchecked, this transformation of our economy will entrench existing inequality, leaving women disadvantaged, excluded and at risk of financial hardship and poverty. But, with the right response, where equality is mainstreamed and every opportunity to tackle inequality and challenge unfair power structures is seized, governments can bring about the green, caring and equitable economy we know is essential for the well-being of future generations.

With this in mind, and the literature suggesting that around the world governments are not doing anywhere near enough to embed an equalities lens into their policies and strategies around digitalisation and climate change, we have considered the extent to which the Welsh Government has mainstreamed equality into key strategies.

The gendered barriers and impacts of digitalisation and the transition to a green economy are discussed in detail in earlier chapters/ separate papers, but in summary, some key considerations for public policy are:

- These transitions in our economy create new inequalities but are also shaped by, and risk exacerbating existing inequality. To approach digitalisation or the transition to a green economy separate from each other, and separate from wider equality and social justice ambitions would be ill-advised.
- The transition in the economy will cause some occupations to disappear but also create new occupations. In this sense, training, reskilling, upskilling and life-long learning opportunities for the workforce become critical. However, women are disadvantaged in these areas so there is a need for policies concerning these areas to address the current gender gaps and inequalities, mitigate negative impacts and provide targeted support.
- Women are at high risk of poverty, not only in terms of money but also in time, access to digital technology and in terms of digital skills. All of which are likely to affect how changes in the economy affect women.
- Women's voices are missing in decision-making, including in digital and climate change arenas. This means their perspective are missing and their needs may be overlooked.
- Care and unpaid work continue to exert significant influence over women's lives, including whether they work, whether they can access training and progression opportunities and the jobs and careers they can consider.

Applying our Intersectional Gender Analysis Framework, we have reviewed fifteen strategies and action plans shaping our economy and our response to digitalisation and climate change in Wales. These are discussed in more detail below.

6.1. Pillars and principles of policy-making in Wales

Before looking at specific policies in detail, it's important to consider the wider legislative and policy context in Wales; a context in which issues of poverty, equality and social justice are prominent. In many ways, Wales has a strong foundation on which to do things differently. From the Well-being of Future Generations (Wales) Act to the Gender Equality Review, the existence of dedicated Ministers for Climate Change and Social Justice, multiple equality action plans, membership of global networks for well-being economies and a commitment being a feminist government, there is a strong, solid foundation in Wales for developing public policy and public services that are focused on tackling inequality and to seek to do things differently. Welsh Ministers have made clear their commitment to making different decisions and mainstreaming equality in policy-making and programme design.

6.1.1. Well-being of Future Generations (Wales) Act (2015)

Passed in 2015, the Well-being of Future Generations (Wales) Act (WFG), was a world first, centring the well-being of the people in Wales and the planet in decision making. The Act requires public bodies to take action toward seven well-being goals, that a drawn from the UN's sustainability goals.

The well-being goals¹⁶⁵



¹⁶⁵ [Welsh Government \(2019b\)](#).

The Act carefully and holistically defines sustainable development which addresses the way that Wales can achieve economic, social, environmental and cultural well-being.¹⁶⁶ To meet the well-being goals and achieve a sustainable development in Wales, the Act requires public bodies to work with five principles – including long term vision, developing an integrated approach, inclusive, participatory and collaborative decision making, and preventing the roots of causes of issues – in decision and policy-making.

By focusing on well-being, the Act requires a shift away from focusing on conventional growth and development indicators such as Gross Domestic Product (GDP) and Gross Value Added (GVA) to well-being indicators and goals in decision and policy-making.

Yet, it is important to underline that the Act doesn't legislate an equalities mainstreaming approach. While a more equal Wales is one of the well-being goals, and most people working on the implementation of the Act would outline that equality is of course central to achieving many of the well-being goals, in practice the tools used to implement the Act across public bodies don't necessarily result in effective mainstreaming of equality. In fact, as outlined in the Gender Equality Review, there are some instances where statutory requirements for equality and well-being compete for resources and attention when they should be coming together in pursuit of complementary goals.¹⁶⁷

6.1.2. Feminist Government and Gender Equality Review

In March 2018 a commitment was made to work towards being a feminist Welsh Government. To support this aspiration, Welsh Ministers commissioned a Gender Equality Review, to consider what was working well and what change was needed.¹⁶⁸ A gender equal Wales was defined *as an equal sharing of power, resources and influence for all women, men and non-binary people*.¹⁶⁹

A feminist Welsh Government:

- Is committed to equality of outcome for all women, men and non-binary people and actively works to drive cultural and structural change;
- Pro-actively works to advance equality and remove the barriers against all women's participation in the economy, public and social life;
- Puts a gender perspective at the heart of decision-making, resource and budget allocation;

¹⁶⁶ [Welsh Government \(2021d\)](#).

¹⁶⁷ Chwarae Teg, Rapid Review of Gender Equality.

¹⁶⁸ Ibid.

¹⁶⁹ Davies N. and Furlong C. (2019), p.17.

- Takes an intersectional approach to all of its work and ensures diversity of representation, participation and voice;
- Is people-focused and collaborative, ensuring that all communities are meaningfully engaged in its work;
- Is open, transparent and accountable and welcomes scrutiny through a gender lens;
- Makes use of policy development and analysis tools to embed gender equality into all of its work and actively monitors progress towards equality using a robust evidence base;
- Leads by example and supports other public bodies to take action to deliver equality.

The Gender Equality Review found that while there are clear ambitions for an equal Wales and a strong legislative and regulatory framework to support doing things differently, in practice, there is an implementation gap. There remains a need for action to properly mainstream equality into all that Welsh Government does, and the report *Deeds not Words* sets out fifty recommendations to do so. These recommendations were accepted in full, and subsequently, a gender equality action plan has been produced to implement these recommendations.

6.1.3. Government Structure and Ministerial scrutiny

Following the Senedd elections in May 2021, a new cabinet was formed which brought new focus to the issues of climate change and social justice, with a Minister and Deputy Minister in each newly created department.

The Minister for Climate Change has responsibility for the environment, energy, housing, planning and transport portfolios, which are at the heart of recovery from the Covid-19 pandemic and economic plans. The Minister for Social Justice has responsibility for equality, inclusion, welfare, poverty, fair work and the voluntary sector.

Setting up these two ministries is a critical and significant move by the Welsh Government, that places these issues at the heart of government. From a policy-making perspective, these two ministers have fundamental roles in overseeing how other departments embed action for a green, low carbon, equal and just Wales into their policy and programme development.

6.1.4. Well-being Economy Governments Partnership

The Welsh Government is also a part of the Well-being Economy Governments Partnership, alongside Scotland, New Zealand, Iceland and Finland, which is a commitment to transforming the economy into a well-being economy.¹⁷⁰ A well-being economy is

¹⁷⁰ Wellbeing Economy Alliance.

an economic model that is designed to serve the well-being of people and the planet first and foremost, and efforts are underway to develop new economic measures and indicators that look beyond GDP and GVA.¹⁷¹

The Well-being Economy Alliance defines the principles of the well-being economy as such:

- 1- **Dignity:** Everyone has enough to live in comfort, safety and happiness.
- 2- **Nature:** A restored and safe natural world for all life.
- 3- **Connection:** A sense of belonging and institutions that serve the common good.
- 4- **Fairness:** Justice in all its dimension is at the heart of economic systems, and the gap between the richest and poorest is greatly reduced.
- 5- **Participation:** Citizens are actively engaged in their communities and locally rooted economies

Committing to a well-being economy and being a part of the alliance are significant steps toward transforming Wales into a fairer, just and greener nation. Welsh Government is setting up targets and developing tools for a new economic model, but this work is still in its early stages.

6.1.5. Foundational Economy

The foundational economy can be defined as the sectors providing community and reproductive goods and services, and many everyday essentials which are a driver of welfare of people. The foundational economy includes sectors that are often dominated by women or directly affect women's lives, such as health, care, education, food, housing, utilities, construction, tourism, and retailers on the high street.¹⁷²

During the pandemic, the importance of foundational sectors became much clearer. While the foundational economy has been a focus for Welsh Government for a number of years, it's become a central focus of economic reconstruction plans after Covid-19.¹⁷³

This policy focus is relevant to this research for a number of reasons:

- Foundational economy sectors are critical sectors for a well-being economy.
- The majority of the foundational economy sectors are dominated by women.
- More than 50% of the jobs in some of the foundational economy sectors such as tourism, food and hospitality and retail are at risk of automation.¹⁷⁴

¹⁷¹ Wellbeing Economy Alliance (2017) p. 7

¹⁷² Welsh Government (2019c) and Foundational Economy.

¹⁷³ Welsh Government (2021b)

¹⁷⁴ Share of time spent in tasks that could be automated in Accommodation and Food Services: 73%, Agriculture: 60%, Retail and Trade: 53%. Source: Kiersz A. (2019)

- Some of the foundational economy sectors, such as health and care and education are already green sectors, and some of them are the focus of decarbonisation plans, such as the energy sector and food/agriculture sectors.

6.1.6. Equality Action Plans

To support equality ambitions, the Welsh Government have a number of equality plans in place. The overarching Strategic Equality Plan 2020-24, required under the Welsh Specific Equality Duties, sets out some long-term aims and associated objectives.

Alongside this overarching plan are several action plans focused on different protected groups, including:

- Advancing Gender Equality in Wales Plan¹⁷⁵
- An Anti-Racist Wales: The Race Equality Action Plan for Wales¹⁷⁶
- Action on Disability: the right to independent living framework and action plan¹⁷⁷

In Autumn 2021 consultation was also carried out to inform and LGBTQ+ Action Plan.

6.2. Programme for Government and Economic Strategy

6.2.1. Welsh Government: Programme for Government 2021-26

*The Welsh Government Programme for Government*¹⁷⁸ has ten well-being objectives at its heart that include building an economy based on the principles of fair work, sustainability and the industries of the future; building a stronger, greener economy, and celebrating diversity and moving to eliminate inequality in all its forms.

The Programme for Government includes substantial commitments on decarbonisation and commits to embedding the response to the climate emergency in all that government does. There are also numerous commitments to advance equality and ensure social justice.

However, while many commitments have great potential to tackle structural inequality and support a just transition both in terms of the green economy and digitalisation, there remains a lack of equalities mainstreaming.

There are structural gendered inequalities that affect women's participation in economy, in certain sectors and areas, most and foremost the STEM areas, and in access to training and

¹⁷⁵ Welsh Government (2020a).

¹⁷⁶ Welsh Government (2021e).

¹⁷⁷ Welsh Government (2019d).

¹⁷⁸ Welsh Government (2021c).

up/reskilling which also fundamentally affect the formation of the labour market and future of the economy. However, the Programme does not mention gender disparities in the economy and suggests any targeted action, except tackling with gender pay gap and implementing targets around gender budgeting (p.6), which have been underlined in the diversity and equality section.

The Programme promises substantial investment in health and social care sectors, including actions such as improving the pay of care workers, sustainable care plans for Wales and expanding free childcare to two years old and for people in training and education. However, even though the care sector is one of the central focuses of the Programme, its relation to the green economy is weak.

As a top-line strategic document it is perhaps understandable to have limited detail in the Programme for Government itself, however, the apparent lack of equalities mainstreaming at this level raises concerns that the same will occur in various strategies and action plans that seek to implement the commitments listed here. The commitments in the Programme for Government have great potential in terms of delivering a green, caring and equitable Welsh economy, but only if implementation is done in a gender sensitive way, and if equality is a goal in and of itself across all parts of government.

6.2.2. Our economic resilience and reconstruction mission

*Our economic resilience and reconstruction mission*¹⁷⁹, published in February 2021, sits alongside the existing economic action plan and Economic Contract, and sets out the priorities of Welsh Ministers as the economy recovers post-covid, but also as the economy changes and evolves.

The plan envisions a well-being economy with the outcome of a prosperous, green and equal economy. There are five pillars for actualising this outcome:

- Strengthening the Foundational Economy,
- COVID commitment to protecting and enabling skills and employment
- Accelerating adaptation for recovery and future prosperity
- Magnetising investment in a green recovery,
- Fortifying the pursuit of social value.

As the former Economy Minister Ken Skates stressed in the foreword, the plan puts achieving a fair, just, greener, prosperous economy at its heart. However, the strong intersectional equality emphasis in the foreword is not reflected in the document itself. Gender equality is not considered or discussed in the document, and there is no evidence that equality analysis has informed the priorities and actions outlined.

¹⁷⁹ Welsh Government (2021b)

Even though this plan has taken equality as a main pillar/outcome for the Welsh economy and equality has been mentioned in the narrative¹⁸⁰, the lack of evidence and measurable targets, and a lack of equalities mainstreaming in different sections of the report stand out throughout the plan. The intention to achieve an equal society and “*fair distribution of opportunities*”¹⁸¹, is in the plan, yet, how this will be achieved, or what the current problems are and how to tackle them is not clear.

The inclusion of equality as a main pillar of the Welsh economy and the discussion of equality in the narrative of this plan is welcome, however, the plan lacks equalities evidence and measurable equality targets. The plan states the intention to achieve an equal society and fair distribution of opportunities, but it is not clear what current challenges will be addressed and how. There is, in fact, no mention of ‘women’ throughout the report, and just two direct references to ‘gender’. There is some limited discussion of race and disability, but overall the focus on equality is limited.

One of the key issues that needs to be addressed for a just transition is the gendered industrial structure and women’s access to training and re/upskilling programmes. The section concerning training, reskilling, upskilling, employability and fair work plans of the policy, for example, has no mention of gendered structures, gender gaps, and policy recommendations targeting women, even though other intersecting characteristics such as race, ethnicity and disability, and age mentioned. A lack of acknowledgement of gender gaps creates gender blind policies; hence, there are no targeted programmes mentioned about employability and training of women, or closing the gender gaps in sectors such as ICT.

Commitments to a well-being economy and to the foundation economy offer opportunities to secure a just transition, given the dominance of women in foundational sector jobs and the need for equality to be at the centre of a well-being economy. These issues are all interconnected and have the potential to come together in pursuit of common goals. However, the links between these agendas are not made in this economic mission. Green jobs are still conceptualised in the energy and manufacturing sectors, and investment in infrastructure (which does not cover ‘social infrastructure’ such as care) is seen as the fundamental action area. Even though investment in health and social care sectors and plans for improving the childcare offer have been mentioned, these are not conceptualised as a part of a green stimulus or a low carbon economy.

¹⁸⁰ Pages 5, 6, 13, 16, 20, 28, 31

¹⁸¹ One important distinction here is that instead of more progressive “equality of outcome” terminology, the government has used “equality of opportunities”.

Overall, ‘Our Economic Resilience & Reconstruction Mission’ is a comprehensive policy framework that touches the milestones of a just and equal society; yet, the framework does not identify existing inequalities or gender disparities. There is a lack of equalities evidence and targeted policies and programmes to tackle inequality, particularly for women. Even though equality has been presented as a pillar of the economic mission, the policy framework is, in fact, gender-blind.

6.3. Automation and digitalisation in the Welsh economy

6.3.1. Wales 4.0: Delivering economic transformation for a better future of work

*Wales 4.0*¹⁸² is a substantial review investigating how digital innovation and automation are likely to impact the economy in the future of work in Wales. The review explores the features of the Welsh economy, the weaknesses and strength of the economy in the course of the *Fourth Industrial Revolution* and sets out an action plan for the future of the Welsh economy.

The review underlines that the Welsh Government has produced important economic plans, that outline the principles of the Welsh Government’s approach to economic development. However, these plans fall short in setting out actions to respond to the rapid transformation of the Welsh economy and wider society with regards to digital innovation and automation.¹⁸³ To succeed in the Fourth Industrial Revolution, the review suggests four principles for policy-making to be adopted by Welsh Government and a wide range of policy recommendations and longer-term actions which are summarised under seven interrelated workstreams. Recommendations include:

- A national conversation with citizens on the future of work and the economy
- The creation of six Industrial Innovation Clusters (IICs)
- Establishing an AI Institute for the Future Economy
- Integrating existing business, skills and innovation support to form a single business diagnostic and transformation process
- Conducting a range of reforms aimed at building capacity within post-compulsory education and development of a new skills framework for Wales
- Introducing a Future Economy Commission

Education and skills for the future of work are a key focus of the review, including how the education system and careers advice need to be adapted to prepare people for new employment types. The Review identifies a number of challenges in relation to education

¹⁸² Brown P. (2019)

¹⁸³ Ibid. p. 9.

and skills, including a lack of resources for supporting lifelong learning and the gap in digital skills based on age, gender and social background. This is the main consideration of equality evident in the Review.

Consideration of equality in the Review is limited. While there is some discussion of gender disparity in the labour market that draws on evidence from other sources, overall there is little discussion of the underlying inequality in the labour market or how to tackle it. There is no discussion or analysis of the root causes of gender disparities, the barriers to women and other disadvantaged groups in participating in the economy or how they will access the labour market in the Fourth Industrial Revolution if these structural barriers persist. The Review assumes that equality will be addressed through broader legislative and policy measures that are referenced, including the Well-being of Future Generations Act, but does not mainstream equality into the analysis of digitalisation or the recommendations made for the Welsh economy.

6.3.2. Digital strategy for Wales and Integrated Impact Assessment (IIA) of the strategy

The Welsh Government Digital Strategy¹⁸⁴, published in 2021, outlines how the Welsh Government will use digital, data and technology to improve the lives of people in Wales. The strategy aims to accelerate the benefits of digital innovation for people, public services and the business community. The Strategy outlines six missions:

- 1- **Digital services:** Deliver and modernise services so that designed around user needs and are simple, secure and convenient
- 2- **Digital inclusion:** Equip people with the motivation, access, skills and confidence to engage with an increasingly digital world, based on their needs.
- 3- **Digital skills:** Create a workforce that has the digital skills, capability and confidence to excel in the workplace and everyday life.
- 4- **Digital economy:** Drive economic prosperity and resilience by embracing and exploiting digital innovation.
- 5- **Digital connectivity:** Services are supported by fast and reliable infrastructure.
- 6- **Data and collaboration:** Services are improved by working together, with data and knowledge being used and shared.

In all these missions, inclusivity is prioritised in the strategy. In the preparation of the strategy, a range of stakeholder groups and forums, including representatives from public services in Wales, members of the Wales Race Forum, businesses and representative trade bodies, children and young people and people with learning disabilities were engaged. This

¹⁸⁴ Welsh Government (2021f).

engagement is an important part of mainstreaming to hear from those with lived experiences.

However, the plan does not effectively present evidence of inequality throughout the delivery strategies and there are no clear recommendations about how to overcome the known inequalities in engagement with the digital world, that are experienced by a number of groups. While digital poverty (*'data poverty'* in the strategy) is recognised as an issue in the strategy, it is discussed in reference to the digital inclusion plan published in December 2020 (analysed followingly), and no clear action plan is stated in the strategy itself.

By not effectively recognising gender gaps, the plan lacks targeted action to eliminate those gaps. The plan is accompanied by an Integrated Impact Assessment, but also demonstrates a lack of equalities mainstreaming. As a result, it's difficult to determine the extent to which equality analysis has informed the development of the Strategy.

6.3.3. Digital Inclusion Forward Look: towards a digitally confident Wales

In December 2020, Welsh Government published a policy and strategy document to outline what the government has been undertaking and will be undertaking to help more people use digital technology with confidence.¹⁸⁵ With the Covid-19 pandemic exacerbating the inequalities caused by digital exclusion, the Welsh Government revisited the definition of digital/data poverty and made substantial changes in the digital inclusion framework which was first published in 2016.

This plan recognises the increased urgency to ensure digital inclusion as a result of the pandemic and the acceleration towards more of our day-to-day lives requiring digital access. It recognises that for groups such as older people, Black, Asian and Minority Ethnic (BAME) communities, refugees and asylum seekers digital or data poverty is a significant issue. The plan commits to engaging with communities directly to understand the barriers they face and develop targeted action, recognising that there is no 'one size fits all' approach to supporting people to engage with and confidently use digital technologies.

It's positive to see this recognition of how inequality can affect groups differently and a commitment to hearing from those with lived experience. However, again, we see a lack of gender equality evidence and analysis in the plan and the plan does not identify the gender gaps that must be closed to ensure digital inclusion.

6.4. Green and Low Carbon Wales

¹⁸⁵ Welsh Government (2020b).

A green economy and a low carbon Wales have been at the heart of Welsh Government policies. In April 2019, the Senedd became the first parliament to declare a climate emergency. The Welsh Government has stated its ambition to reach net zero carbon emissions by 2050 and to make the Welsh public sector carbon neutral by 2030.¹⁸⁶ There are a number of key plans and strategies that set out how Welsh Ministers intend to do this.

6.4.1. Prosperity for All: A Low Carbon Wales

*A Low Carbon Wales*¹⁸⁷ sets out Welsh Government's vision for a low carbon Wales and the pathway to decarbonise the Welsh economy. The strategy identifies a vision and key policy areas critical for tackling climate change. These are:

- Reducing the carbon emission by 80% by 2050 (which was then amended to 100%)
- Creating 'future-proofed', green, quality jobs
- Creating healthier communities and environment
- Establishing a circular economy, and organising waste management in a way to transform into recovery and regenerate
- Using renewable energy
- Supporting localised production and local communities.

Despite being called *A Low Carbon Wales* the main focus of this strategy is decarbonisation of the most polluting sectors and radically cutting carbon emissions in Wales, rather than a broader look at what a low carbon Wales will need to look like. The strategy aims to put in place the necessary systems and policies to achieve the long-term targets, across the key areas of **agriculture, land use, transport, energy, the public sector, industry and business, waste and homes.**

The strategy sets targets to meet the carbon budget through 100 policies and proposals from across all parts of government. The focus of the policies and proposals are:

- Direct emission reduction activities or ones that support clean growth
- Actions to develop our evidence base to make future decisions
- Knowledge transfer to share learning
- Funding mechanisms
- The role and establishment of advisory bodies and collaborative groups.

A key issue with this strategy is the narrow focus on decarbonisation rather than a genuinely a low carbon Wales. As a result, the Strategy overlooks vital sectors such as health and social care and education, which are low carbon and critical to a just and fair transition. As outlined earlier in this report, the narrow focus on decarbonisation is problematic from an equalities perspective.

¹⁸⁶ [Welsh Government \(2019e\).](#)

¹⁸⁷ Welsh Government (2019f).

The strategy recognises climate change as an equality issue that disproportionately affects the most vulnerable communities in Wales and around the world, and it also frames decarbonisation as an opportunity to create a vibrant and socially-just economy and a society that ensures well-being and tackles inequality. The Strategy sets out a Well-being Matrix tool to be used as part of the Impact Assessment tools used by Welsh Government, to support the development of policy that focuses on reducing carbon emissions and drives wider economic, social, cultural and environmental benefits.

However, despite some discussion of equality, overall there is a lack of gender or equalities mainstreaming evident in this Strategy. There is no meaningful identification of how climate change is affecting different people in Wales, what the existing structural inequalities are in this space or how decarbonisation plans will affect the livelihoods of different groups in Wales. There is no specific action on how vulnerable communities will be protected from the impacts of climate change, or supported to access new opportunities created through climate action.

For example, skills are a key policy area for decarbonisation and net zero. We know there are significant equalities issues in relation to skills, with people with protected characteristics having fewer opportunities to access training or reskilling and upskilling programmes, which is linked to issues of stereotyping and caring responsibilities. While the Strategy outlines commitments to review skills gaps and shortages, there is no discussion of inequalities in the labour market and how this interacts with skills issues. As a result, there is no commitment to targeted action to support under-represented and disadvantaged groups as part of net zero skills activity, despite inclusivity being noted as a priority for the Strategy.

Another example relates to transport. Transport is an important part of decarbonisation plans, with a need to encourage behavioural change towards greener modes of transport. However, there is no discussion or analysis of the different travel patterns and behaviours of women and men, which will significantly affect how successful wider behavioural shifts are.

This strategy provides a critical framework for Welsh Government's climate action, and while there is some discussion of equality, there is a lack of meaningful equalities analysis. While there is a commitment to ensuring a fair and just transition, the lack of equalities mainstreaming in this Strategy means that many equalities issues relevant to climate action and the green economy have been overlooked.

6.4.2. Net Zero Wales Carbon Budget 2 (2021-2025)

Published in October 2021, *Net Zero Wales Carbon Budget 2*¹⁸⁸ is the second emission reduction strategy setting the foundations to make Wales net-zero by 2050.¹⁸⁹ This Strategy represents a new phase of decarbonisation coming after *Prosperity for all: A low carbon Wales*, setting out 123 commitments and actions. It also marks an improvement from *Low Carbon Wales* from an equality perspective to the extent that the process of decarbonisation is considered along with equality issues.

Welsh Government has committed in the plan to create greater equality and better outcomes in communities, alongside nurturing economic health and international competitiveness, while working on the climate targets. The primary action is to understand how communities and businesses will be affected by the changes and put in place the mechanisms to ensure both positive and negative effects are distributed fairly. It is stated in the plan that “*the burden of change falling on the shoulders of those least able to pay, as costs are passed down the supply chain from manufacturers to consumers of goods and services*” must be avoided.¹⁹⁰

The focus on decarbonisation and high-carbon sectors for a greener Wales has not changed and the Strategy remains focused on the same sectors as *Low Carbon Wales*. However, the plan has developed a new approach in determining the action areas in the process of decarbonisation, taking an actor based approach to the action plan. It calls for all citizens, communities, groups and businesses in Wales to take an active role in achieving net zero targets, and to embed the climate emergency in the way they think, work and travel. Welsh Government calls for a socio-economic and cultural change in Wales, a change in the way people in Wales are living.

Barriers to this cultural shift are identified as cost, the complexity and volume of information to achieve a green way of living, and having the right skills and supply chains to enable the change. There are no intersectional equalities of these barriers or discussion of how this cultural shift may affect different people in different ways as a result of inequality.

Different to *A low carbon Wales*, this plan has introduced the ‘Team Wales’ approach, setting out the actions needed by the Welsh public, the public sector, Welsh businesses, the UK Government, and international partners.

¹⁸⁸ Welsh Government (2021g).

¹⁸⁹ “Net Zero means the greenhouse gases taken from the atmosphere is in balance with the greenhouse gases emitted.” P.2.

¹⁹⁰ p. 7

The Strategy sets out a number of actions (outlined in the box below) needed by individuals in relation to how they travel, improvements to the energy efficiency of their homes, choices about food and ethical goods and recycling as much as possible. These actions come with both a financial and time cost, and as outlined earlier in the report, this has equalities implications. Women, who already shoulder an unfair amount of unpaid work, are at risk of becoming even more time-poor as a result of these necessary actions. The lack of equalities analysis in the Strategy means that these implications for equality are not considered, and no mitigating action is taken. For example, individuals are asked to consume healthier, locally produced, sustainable food, which will be more costly but there is no consideration of how much produce can be made more affordable. People are also asked to use greener travel options, but again there is no consideration of the different travel patterns of women and men, and how transport provision needs to change to enable women to make the green choice.

Welsh government asks of Welsh public for the decarbonisation of the economy:

Electricity and Heat Generation: We ask the public to improve decisions in energy efficiency, generation and storing their own energy whilst also making conscious choices on the amount of energy consumed and how they heat their homes, switching to more low carbon electricity and heating fuels.

Transport: We ask the public to make conscious choices for their transport and mobility needs, replacing journeys with low carbon, active travel, or public transport where possible and also reduce the amount of flying.

Residential Buildings: We ask the public to consider ways in which they can retrofit and decarbonise their homes.

Industry and Businesses: We ask the public to shop and consume goods and service closer to home, supporting local town centres and to also use their buying power to support businesses which are leaders in tackling climate change.

Agriculture: We encourage Welsh consumers to eat healthier, more sustainably sourced food and to actively consider the positive impacts of eating locally sourced food and minimising food waste.

Land Use, Land Use Change and Forestry (LULUCF): We encourage everyone in Wales to have the to plant a tree in their garden, school or community and to also better understand the importance of peatlands and the ecosystems services; and increase their awareness of the damaging effects of using peat based compost can have.

Waste Management: We ask the public to continue separating recyclables, reuse and recycle where possible and only buy what they need in order to reduce waste. We also would encourage a sharing economy within communities to redistribute surplus food

from the supply chain to communities in need, thus preventing food waste going to landfill.

From an equalities perspective, *Net Zero Wales* is an improvement on *Low Carbon Wales*. It looks at the action required by more actors to deliver a low carbon economy and discusses how this transformation must lead to equality and better outcomes. However, more could still be done to mainstream equality into the core of the Strategy. A lack of equality impact analysis means that the likely unequal impacts of the commitments and actions in the Strategy are not identified, and mitigating actions are not included.

While we would not expect to see significant detail in an overarching framework such as *Net Zero Wales*, there is still a need for existing inequality and the equality implications of commitments to be identified. Without such analysis, the actions contained within the Strategy are unlikely to be successful and the risk of further entrenching inequality is high.

6.4.3. Future Wales: The National Development Plan 2040

*Future Wales – the National Plan 2040*¹⁹¹, published in February 2021, sets out key priorities for investment in urban and rural development, physical infrastructure (including housing, transport, renewable energy schemes and digital communication) and new public facilities and services. *Future Wales* aims to ensure that the planning system at all levels is consistent with, and supports the delivery of Welsh Government’s other strategic aims and policies.

The plan sets eleven targets and outcomes for Wales where people live...

1. ...and work in inclusive and healthy places
2. ...in vibrant rural places with access to homes, jobs and services
3. ...in distinctive regions that tackle health and socio-economic inequality through sustainable growth
4. ...in places with a thriving Welsh Language
5. ...and work in towns and cities which are a focus and springboard for sustainable growth
6. ...in places where prosperity, innovation and culture are promoted
7. ...in places where travel is sustainable
8. ...in places with world-class digital infrastructure
9. ...in places that sustainably manage their natural resources and reduce pollution
10. ...in places with biodiverse, resilient and connected ecosystems
11. ...in places which are decarbonised and climate-resilient

¹⁹¹ Welsh Government (2021h).

The plan underlines that the health and well-being of communities are at the heart of development in Wales, alongside tackling climate change and hitting net zero targets. It emphasises that *“climate change is an equality issue as it will disproportionately affect the most vulnerable communities in Wales and the wider world. (...) Vulnerable communities are more likely to be exposed to the risks and impacts of climate change without the ability to cope with or recover from those impacts.”*¹⁹²

The plan, however, outlines inequality in Wales only from a socio-economic perspective, which is essentially based on deprivation, poverty and uneven distribution of wealth. These issues are not framed from an intersectional equality perspective; there is no particular reference to evidence of inequalities, and the inequalities that certain groups of people with protected characteristics experience, except the needs of older and disabled people in housing development.

As an overarching plan, a detailed discussion of inequality is not necessarily expected, but we would expect some consideration of how inequality can be tackled through sustainable spatial development. The socio-economic figures outlined in the strategy are not disaggregated by gender or any other protected characteristics, leaving the equality analysis incomplete.

From a gender equality perspective, spatial development and planning are critical for women’s access to the labour market and their participation in the economy. Spatial development has different impacts on women and men, and existing gender inequalities in the organisation of space, housing, transport and access to natural resources affect women’s participation in social, economic and public life. If this was recognised, and equality mainstreamed, then the National Development Plan could play an active role in delivering equality and tackling poverty.

6.5. Stronger, fairer, greener Wales: a plan for employability and skills

Employability and skills policy will play an important role in the Welsh Government’s response to both digitalisation and climate change. A new *Employability Plan*¹⁹³ was published in March 2022, and work is ongoing on a *Net Zero Skills Plan*. The decision to pilot equalities mainstreaming policy development model, as recommended in the Gender Equality Review, on the Net Zero Skills Plan is a significant step and very welcome. The Plan is based on the previous employability plan, which was published in 2018. A cross-policy approach is adopted in the Plan by referencing other policies and goals, such as *The Well-being of Future Generations Act and the Well-being Goals* (which is foundational for

¹⁹² P.45.

¹⁹³ Welsh Government (2022).

the Plan), *the national indicators for Wales, the national milestones, the Socio-economic Duty, the Net Zero Wales Carbon Budget, the Race Equality Action Plan, the Advancing Gender Equality in Wales, the “Locked Out: Disabled people’s lives and rights in Wales beyond COVID-19”* and the *Economic Resilience and Reconstruction Mission*. Cross-referencing other policies is important to establish an integrated approach across different departments of the Government in this crucial policy area.

The Employability Plan prioritises five key areas of action:

- Future Generations
- Economic Equality
- Fair Work for all
- Healthy Work, Healthy Wales: Supporting people with a long term health conditions to work
- Learning for life

In each priority area, the Plan outlines the context and evidence, underlines headline priorities for that area of focus, defines success measure (which is also the national milestones), recent developments regarding the priority area, and gives headlines of how the priorities will go forward. This is an improved structure compared to other policy frameworks as the Plan puts some targets and actions in place.

The Plan has an intersectional equality approach to the challenges in the labour market, particularly focusing on the experiences of people from ethnic minority backgrounds and disabled people; however, equality is not mainstreamed in the Plan. Furthermore, unlike the previous employability plan, gender disparities and inequalities in the labour market are overlooked throughout the plan.

The second priority area, *Economic Equality*, presents the Government’s targets for achieving equality in the labour market. The success measure of this section is set as *“Eradicate the gap between the employment rate in Wales and the UK by 2050, with a focus on Fair work and raising labour market participation of under-represented groups”*¹⁹⁴ which is based on the participation of underrepresented groups in the labour market. However, there is no indication in the Plan of where the gaps are in the economy, and how these under-represented groups will engage in the labour market. For example, as the *Learning for Life* section of the Plan strongly emphasises, there are a series of challenges and opportunities that disrupt the demand for and of labour across both the public and private sectors, including digitalisation, automation, artificial intelligence, the transformation towards a net zero economy (i.e. green economy); yet, how the underrepresented groups and women experience the challenges and take up the opportunities in the emerging labour

¹⁹⁴ P.25

market is not indicated in the Plan. Setting a target of increasing employment rates of underrepresented groups does not necessarily mean eliminating the inequalities and gender disparities in the labour market.

The use of equality evidence and recognition of challenges that women and people with protected characteristics are slimmer in this plan compared to the previous Employability Plan. In the current plan, even though some evidence of poorer labour market outcomes for people from ethnic minority backgrounds and disabled people is given, women's place in the labour market is largely overlooked. Compare to this, the 2018 employability plan had a stronger equality focus by indicating geographical variations in employment, underemployment and in-work poverty as challenges in the labour market, and recognising structural gender inequalities such as the burden of caring responsibilities, underrepresentation of women in senior roles, unconscious bias, gender gaps in the sectors, gender stereotyping and underrepresentation of women in STEM areas.

While the recent Plan keeps the pledge of extending the childcare offer to all two years old and improving support for families where parents are in education and training or on the edge of work, there is no emphasis on developing support mechanisms for other caring duties, which often fall on women, as the previous Plan did. In fact, whilst the previous plan gave a central role to the care sector, in the recent Plan, the emphasis on the care and care sector is very limited.

Overall, even though equality and diversity are set as a priority area, inequalities in the labour market and gender disparities in education, training and employability are not stated in the Plan. The Plan falls short in addressing the gender inequalities in the labour market and setting out actions for strengthening the labour market position of women in the future of the economy.

6.6. Conclusion

The major economic trends that shape the future of the economy have a considerable impact on work and the labour market, which are already segregated by gender and characterised by structural inequalities and gender disparities. To achieve a just transition that delivers fair outcomes for women, underrepresented and vulnerable groups, effective and targeted policy interventions are needed. Without the right policy interventions, existing inequalities will be exacerbated in the course of the transition.

Wales has world-leading policies and commitments for achieving a just and fair Wales. These policies and commitments allow Wales to develop new policy tools, adopt alternative approaches that are outside of conventional economic thinking and put the well-being of people and the planet at the heart of policy-making. Many of these policies are fairly recent

and their potential and impacts are yet to be fully realised. However, by prioritising the well-being of future generations and the planet, Wales has already taken a significant step towards an equal and just society.

Our policy analysis, however, shows that even though Wales has the foundations and the tools to do things differently, these are not fully utilised in policy-making in terms of equalities. In many policies, inequality issues are not clearly indicated. There is a lack of an integrated and holistic approach in developing policy frameworks, which causes equality issues to be siloed in certain parts of the policies but not mainstreamed throughout.

The policies that we analysed in this report barely use equalities evidence, let alone mainstream equality. The lack of recognition of gender and other intersectional inequalities makes policies gender-blind. As a result, the policies fall short in acknowledging existing inequalities and the impact of the policy on different groups, and consequently, there are missed opportunities to put in place targets for reducing inequality and targeted actions to tackle the root causes of this inequality.

The current pilot of the equalities mainstreaming model to inform the Net Zero Budget Plan by Welsh Government is a welcome move that can help to improve the use of equalities analysis in policy-making. The learnings from this pilot should inform further plans to change how policy is made by Welsh Government. This work must be accompanied by faster implementation of all the recommendations in the Gender Equality Review report *Deeds not Words*, to ensure effective equalities mainstreaming across all Welsh Government departments.

Recommendations:

- 1) Welsh Government should quicken the pace of implementation of the recommendations of the Gender Equality Review outlined in *Deeds not Words*, which provides a clear roadmap towards equalities mainstreaming.

7. Conclusion and Recommendations

Our economy is undergoing a seismic change. In the face of major trends, such as digitalisation and the need to transition to a green economy, we must ask ourselves what kind of economy we want in the future. Chwarae Teg's view is that we need a green, caring and equitable economy. We can only make this a reality if we prioritise equality in our response to these major economic shifts.

Both digitalisation and the transition to a green economy are having different impacts on women and other marginalised groups. While they are at risk of the worst impacts of these trends, they are also less likely to benefit from the opportunities created as we respond. This differential impact is rooted in the inequality that characterises our economy and society. Inequality in relation to digitalisation and the transition to a green economy cannot, therefore, be viewed in isolation from wider issues of social and economic inequality.

In relation to digitalisation, women face different risks of job losses and job changes brought about by automation and they are missing from the sectors that are likely to see growth in skilled, well-paid roles as a result of digitalisation. Digital technology, including AI, is biased, partly due to the lack of women in development and decision-making roles in the digital sector. Therefore without intervention, our increasing reliance on AI risks entrenching inequality. And access to digital technology, in terms of digital skills and poverty, is gendered, which risks leaving vulnerable groups behind as more of our day-to-day lives move online.

Looking at our transition to a green economy, we see that again women are being impacted to a greater extent by the negative impacts of the climate crisis and the action to reduce emissions, while also being less likely to benefit from government investment, emerging jobs and training created as a result of net zero action. This inequality is rooted in exploitative economic processes and orthodox economic thinking that prioritises growth over well-being, a lack of women in decision-making and poor democratic processes around climate action, and under-representation of women in sectors that are the focus of decarbonisation plans and burden of unpaid work falling to women. And too often government climate strategies ignore inequality as an issue and have too narrow a focus on the decarbonisation of dirty industries and therefore fail to consider how other vital sectors feature in a green economy.

It is essential that equality is mainstreamed into how we respond to both of these major economic issues. However, while Wales has world-leading policies and commitments for achieving a just and fair Wales, that allow us to develop new policy tools, adopt alternative

approaches that are outside of conventional economic thinking and put the well-being of people and the planet at the heart of policy-making, we are yet to see this translate into action. Too many of the key strategies and action plans that shape our response to both digitalisation and our transition to a green economy are gender-blind, showing little equalities analysis and therefore falling short in acknowledging existing inequalities and the impact of the policy on different groups. Consequently, there are missed opportunities to put in place targets for reducing inequality and targeted actions to tackle the root causes of this inequality.

Recommendations

- 1) Welsh Government should implement the recommendations outlined in our [Manifesto for a Gender Equal Wales](#), to address the root causes of gender inequality alongside the specific recommendations made in this report
- 2) Welsh Government should quicken the pace of implementation of the recommendations of the Gender Equality Review outlined in [Deeds not Words](#), which provide a clear roadmap towards equalities mainstreaming.

To ensure digitalisation delivers fair outcomes:

- 3) Welsh Government should require employers to carry out an analysis/ evaluation of the equality impacts of automation within their workplace every 2 years. This analysis should be published.
- 4) Welsh Government should pilot a programme for career switchers moving into digital, with a focus on women and other under-represented groups in digital jobs.
- 5) Welsh Government should create a clear apprenticeship pathway into digital, up to degree-level qualifications. This pathway should be accompanied by targeted action to engage more women and other under-represented groups with digital.
- 6) The UK Government should monitor and report on issues of bias in AI and digital technology:
 - a) A clear reporting system should be created for people to report bias.
 - b) Data on bias should be reported publicly to help understand the scale of digital bias and inform improvements to research, development and evaluation of digital innovation.
- 7) Welsh Government, potentially via the Centre of Digital Public Services, should ensure that digital skills plans in Wales articulate a baseline level of digital skills, a target of the proportion of the population that should reach this baseline and a deadline for when this target will be reached.
- 8) The UK Government should recognise broadband as an essential utility, in-line with electricity, gas and water, and put in place the relevant regulation to ensure all households have access to affordable broadband.
- 9) Local Government should ensure access to digital equipment by:
 - a) Ensuring that all community hubs and schools have adequate equipment.

- b) Implementing schemes to recycle and repurpose old digital equipment for those on low incomes.

To ensure a just transition to a green economy:

- 10) Welsh Government should create a clear career pathway into Green STEM jobs, that is focused on supporting women and under-represented groups. This pathway should include improved careers advice and guidance, recognised qualification pathways, training and a clear apprenticeship framework.
- 11) Welsh Government should work with Welsh HEIs to create a qualification in agro-ecology, to support greener agricultural processes and engage more women in the rural economy.
- 12) Welsh Government must adopt a broader definition of a “green economy” that moves beyond decarbonisation to consider a genuinely low carbon Wales, and how this links to the foundational and well-being economy.
- 13) Welsh Government must invest in the care sector to support a shift to even greener ways of working and deliver good, quality jobs.
- 14) Welsh Government should unlock the potential of retrofitting homes to deliver social justice by:
 - a) Prioritising homes in the most disadvantaged communities to address issues of fuel poverty;
 - b) Set a target for a proportion of all jobs and training opportunities created through the retrofit programme to be filled by women and other groups under-represented in the construction industry.
- 15) Welsh Government and Local Government should commit to democratising decision-making about climate change and the transition to a green economy, including greater use of citizen assemblies and other inclusive engagement tools.
- 16) Employers should consider the equality impacts of changes to workplace policy and practice to transition to greener ways of working.

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Appendix A

<p>Overarching Questions</p>	<ul style="list-style-type: none"> • From an intersectional perspective, what are the likely inequalities and barriers in the future economy in Wales? • To what extent are women represented in decision-making about the future of the economy? • How can women’s participation be improved in the economy in the future?
<p>Automation</p>	<ul style="list-style-type: none"> • How is automation affecting work now, and how will it affect work in the future? • What is the likely impact of automation on women? What barriers are women likely to encounter? • Is the workforce being effectively prepared for automation? • How can automation be used to create a fairer, equal, greener economy?
<p>AI and Digitalisation</p>	<ul style="list-style-type: none"> • Is Artificial Intelligence fair? Who designs the digital world and AI? • Will AI help to eradicate inequalities or will it preserve/recreate existing gender roles and stereotypes?
<p>Green economy</p>	<ul style="list-style-type: none"> • What does ‘Green Economy’ mean? • What sectors and occupations are considered part of the ‘green economy’ in mainstream discussions? • Do mainstream discussions of the ‘green economy’ consider women? • What will the impact of the transitions to a green economy and action to tackle climate change be on women, particularly on unpaid work and emotional labour? • What is a ‘Feminist Green New Deal’? What are the priorities of a feminist green economy?
<p>Policy framework for a just transition</p>	<ul style="list-style-type: none"> • What are the main Welsh Government policies and programmes focused on responding to economic trends and transitioning to a green economy? • How is gender equality mainstreamed in these policies and programmes?

Appendix B

A glance to *Intersectional Gender Analysis Framework (IGAF)*

Women, men and non-binary people are affected by existing structures and policies differently. Gender hierarchies and power relations exist in social and economic structures. We don't live in equal societies, and it is critical to acknowledge inequalities in order to overcome them.

A lack of diverse experiences informing policy development and decision making means policy often fails to respond to the diverse needs of people, and recreates and re-enforces inequality. This is exacerbated by a lack of equalities competence and capabilities in people who hold decision and policy-making positions, failing to address inequality within policy and legislation and to take a targeted approach to marginalised and disadvantaged groups.

Gender analysis in policy-making is critical so that gender is never absent and gendered power relations are considered. In many policies, gendered power relations and structures that exist within society are not considered; a so-called *gender-neutral* approach is implied. However, a gender-neutral approach in policy-making is not advised as this will lead to gender-blind outcomes, which fail to understand gender hierarchies, gendered relations and structures, and will not produce equitable outcomes. Existing inequalities caused by gendered relations and structures will be recreated and reinforced.

The purpose of gender analysis is identified as:¹⁹⁵

- acknowledging differences between and among women and men, based on the unequal distribution of resources, opportunities, constraints and power;
- ensuring that the different needs of women and men are clearly identified and addressed at all stages of the policy cycle;
- recognising that policies, programmes and projects can have different effects on women and men;
- seeking and articulating the viewpoints of women and men and making their contribution a critical part of developing policies, programmes and projects;
- promoting women's participation and engagement in community, political and economic life;
- promoting better informed, gender-responsive and effective interventions.

At Chwarae Teg, we developed a two-stage intersectional gender analysis.

¹⁹⁵ EIGE (2019), *Gender analysis*, <https://eige.europa.eu/gender-mainstreaming/methods-tools/gender-analysis> ; https://eige.europa.eu/sites/default/files/mh0319271enn_002.pdf (Access: September 2021).

Stage One: Critique of policy

Purpose:

- Considering whether the policy has been developed using an equalities mainstreaming approach
- Considering the likely/ potential impacts of the policy from a gender perspective
- Informing recommendations to strengthen policy (Stage 3)

Critique of policy should consider:

- Whether the policy could have unexpected consequences for women and men and whether it risks discrimination
- Whether every opportunity has been taken to tackle structural/ historical inequality

Stage Two: Expert Policy Analysis

Purpose:

- Analysing the (potential) impact of the policy from a gender perspective
- Finding out how the policy can be improved

Expert policy analysis should consider:

- The direct and indirect impact of the policy on the everyday life of women and men
- The gender disparities and gender gaps in the policy and the policy area
- How the policy can be improved to meet the needs of women and tackle structural inequality
- How the policy can deliver better outcomes

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