Inequality in a Future Wales:

Areas for action in work, climate, and demographic change - Full Report

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INTRODUCTION AND BACKGROUND

The sustainable development approach within the Well-being of Future Generations (Wales) Act 2015 requires policymakers to take a long-term view so that their decisions do not impact negatively on future generations. This research examines key future trends and consider how current and future policies associated with these trends can, simultaneously, tackle entrenched inequalities.

The first statutory review of progress towards meeting the well-being goals identified these three key future trends as central to 'A More Equal Wales' (Future Generations Commissioner Wales 2020):

1. Automation and the changing future of work
2. Climate change
3. Demographic change

Existing evidence shows that long-term socio-economic inequalities have become entrenched in Welsh society through deindustrialisation and the 2008 financial crisis and subsequent recession.[1] Research on COVID-19 showed how existing structural inequalities led to an uneven distribution of suffering in terms of illness, poverty, unemployment, poor housing and access to green space (British Academy 2021a).

A rapid review of key trends in the future of work, climate and demographic change revealed that the idea of promoting equality is not central to policy innovations in these areas. Further, inequalities will increase in the future if nothing is done, and if conflicts between achieving economic growth, promoting equality and environmental change are not addressed. Without intervention, the climate crisis will similarly accentuate inequalities (Dasgupta 2021).

The researchers shared summaries of the literature reviews with Welsh equality, policy think-tank and civil society organisations via online discussion groups.[2] The participants told us about the immediate and serious implications of the COVID-19 pandemic, and how it has created new, or entrenched existing, inequalities. This learning complements our analysis of the unequal impact of COVID-19 in Wales. The data reveals the immense impact that the pandemic has had on widening socio-economic inequalities. Disabled and older people, men and people from Black and South Asian communities have been disproportionally vulnerable to acquiring COVID-19 and having serious or fatal outcomes (Marmot et al. 2020).[3] People on low incomes, in frontline roles and in precarious work, disproportionately women, disabled people, and some

1 Deindustrialisation in Wales refers to the decline of the manufacturing and industrial sectors, which previously were dominant in the economic, social and cultural life of Welsh communities.
2 Evidence gathering took place between March and June 2021. Organisations participating in the group discussions are listed at Appendix 1.
3 The evidence review is based on sex disaggregated data. We use the term gender throughout to signify the gendering of education, employment, etc., and its material effects.

ethnic minority communities, and people at the intersections of these social and economic divisions have been further economically disadvantaged (British Academy 2021a).[4] These are also the groups most vulnerable to climate change, changes in the organisation of paid work, and changing demographics (Dasgupta 2021), hence our focus on socio-economic inequalities throughout the report.

The report sets out possible futures for work, climate and demographic change, and how change might impact inequality. Current policies are discussed in each section, data gaps are noted throughout, and we offer suggested actions to promote equality. We conclude that current policies are insufficient to deal with the scale of change and inequality. In this regard, we also set out policy development options to embed equalities and sustainability in long-term policymaking and futures thinking.

Finally, the report considers how the different frameworks that underpin sustainable development, equalities and futures thinking can intersect. The report does not cover every aspect of our society, economy, environment or culture. We consider this a starting point – one that leads to the creation of ongoing conversational and policymaking spaces for considering future inequalities.

RESEARCH DESIGN AND METHODS

This report addresses concerns that future changes to the environment and natural resources, work, mobility and an ageing population will contribute significantly to social, economic, environmental and cultural inequalities in Wales.

We focused on the following research questions:

- What are the key equality issues and how have they changed because of COVID-19?
- What are the key future trends and related policy areas for Wales?
- Will they increase or decrease inequality?

Our approach involved sequential tasks. The first was to summarise the literature and provide new analysis on COVID-19's impact on inequalities in Wales, consider why certain groups were affected, and how future trends might be handled in a just manner. We did this by conducting a rapid literature review (academic and policy think tanks, research from equality groups and policy documents).

The second task was to identify key future trends. This was completed through an academic literature review and information from government sources, several think-tanks and international research organisations. Understanding their projections and scenario building

[4] An intersectional approach seeks to understand the way in which equality grounds such as gender, ethnicity, disability and social class interact, producing unique experiences and compounding disadvantage in specific situations.

were important sources for our deliberation, as well as the Future Generations Commissioner for Wales' (2020) statutory review of progress towards embedding the well-being goals in public policy. This identified three key future trends with significant equality impacts: the future of work (automation, artificial intelligence, digitisation); climate change (environment; natural resources); and population change (health and social care).

We then invited twelve equalities and civil society organisations in Wales to participate in an online, focused group discussion, to distil the inequality impacts of COVID-19 and discuss future trends of concern (see participants at Appendix 1). We are terming these interactions as group discussions, because the online format, with one person speaking at a time, precludes the sharing of knowledge through interactive discussion that qualitative focus group methods are designed to facilitate in face-to-face interaction. These sessions were recorded and subsequently transcribed. Eleri Williams from the Future Generations Commissioner's Office attended these group discussions and provided additional notes.

We supplemented the group discussions with one-to-one conversations with policymakers and academics. The discussion group agreed that the future of work, climate and demographic change should be central to futures thinking on equalities. They also identified the need for these trends to be considered when tackling poverty, mental health and the further breakdown of social cohesion.

Emerging 'areas for action' were subsequently discussed with the discussion group, and we are grateful to them for their time and providing a nuanced understanding of immediate concerns, and of the need to bridge equalities and futures thinking in the longer-term. We are especially grateful for their engagement with this research in this COVID-19 era of work intensification. Their thoughts and direct quotes are interspersed throughout the document.

The suggested 'areas for action' will be tested with citizens' panels, equality and environmental groups and policymakers in a planned second phase of this research to allow these complex ideas to be fully discussed, challenged and refined.

SUSTAINABLE DEVELOPMENT AND EQUALITY: UNDERSTANDING THE FRAMEWORKS

This section sets out the theoretical frameworks for considering the main drivers of inequalities, the concepts underpinning sustainable development, and how we might intersect these frameworks for joined up policymaking.

Inequality affects a large proportion of our society in Wales (Keaver et al. 2020; Platt and Warwick 2020; Walsh et al. 2020; McCartney et al. 2017), with specific areas amongst the most deprived within the UK (Mayhew et al. 2020). The gap in income, education, and physical and mental health between the most and the least deprived areas has risen along with austerity politics (Currie et al. 2021; Etherington 2020). Inequality has come to shape much of Wales' health and social care, housing and education legislation, which are largely devolved areas of

policy (Farnsworth 2021). Despite long-standing efforts to tackle inequalities through integrated policy and legislative changes (Evans 2019), concern is mounting that those inequalities are becoming fixed and that this has come to reflect a degree of confirmation bias; whereby the actual persistence of inequality is supported by a belief about its persistence (Peters 2020). It is hard to make sense of the complex picture of inequality, but some inequality trends can change or reduce where efforts are co-ordinated and comprehensive, and well resourced.

Work in this area is complicated by different approaches to equality, sustainability and the future. As noted in the first attempt to align well-being and equalities visioning and governance in Wales, well-being emanates from a health and social care paradigm, sustainability from development discourses, and inequalities is informed by legal, cultural, sociological and economic disciplines (Parken and the Well-being and Equalities Working Group 2019).

APPROACHES TO EQUALITY

It is our view that one way of uniting these frameworks is through the politics of redistribution (Fraser 2013). To understand the drivers of future inequality in Wales, we start with the work of Marmot, based in public health and epidemiology, and Fraser, based in social and political science. Marmot and his team (referred hereto after as Marmot), have consistently evidenced widening wealth and health gaps between the relative social and economic (hereafter socio-economic) status of communities and groups, which is largely responsible for many other social, economic, environmental, and cultural chasms. Marmot argues that the inequalities evident in society following the pandemic were "markers of a society that is not functioning to meet the needs of its members" (Marmot et al. 2020). Marmot's remedy is to focus on improving the existing conditions for children who are in poverty (both prenatal and later) to prevent its continued intergenerational transmission within declining communities (Marmot 2020).

Marmot (Marmot et al. 2020) advocates making early years education universally available, and ensuring adequate provision of housing, health, and food security throughout the life-course. All these areas identified in his previous work are confirmed as those most negatively impacted by the pandemic measures. COVID-19 most exposed those who had suffered adverse life experiences at this early stage.

The equality approach advocated by Marmot and others reflects the call for a 'redistributive' politics supported by a more just distribution of wealth (Fraser 2009; 2013; Knijn et al. 2020). Fraser notes the existence of a second form of equality politics which has become more prevalent in policy approaches in the last decade, that of group identity 'recognition' and expansion of rights based on particular characteristics. She argues that progress on socio-economic inequality across ethnicity and gender, which create new class hierarchies, has been forestalled by shifting efforts to try to distinguish between cultural and socio-economic approaches to redressing injustice, leading to differing equality approaches in policymaking.

The construction of a debate, or competition, between these positions has undone, she argues, much of the positive work done by both.

Both 'redistribution' and 'recognition' approaches inform the methodology for this report, as we consider that they can be used contemporaneously (Rees 1998). Action is needed to recognise and address discrimination, harassment or hate crime, and barriers to progression based on protected characteristics. Action is also needed to address the fundamental structural inequalities at the root of creating such cultural distinctions, the increases in poverty and shortened futures for all groups (Fraser 1997). Attending to 'maldistribution', where societal resources (largely economic, but also social and environmental and cultural) are found to be unevenly distributed across groups, cultures, communities, places or landscapes (Olson 2008), is essential to prevent the transmission of inequalities across generations.

SUSTAINABLE DEVELOPMENT, A JUST TRANSITION AND FUTURES

The other reason that we focus on a redistributive approach to inequality is that it largely underpins approaches to sustainable development and just transitions. These concepts, along with 'futures thinking', are at the core of the Well-being of Future Generations (Wales) Act 2015 (Azam 2020). In the Act, sustainable development is based on the following definition:

> This model seeks to reconcile the ecological, social, and economic dimensions of development, now and into the future, and adopts a global perspective in this task [where the latter] aims at promoting a form of development that is contained within the ecological carrying capacity of the planet, which is socially just and economically inclusive. (Baker 2016)

While there are now many versions of sustainable development, it is the original Brundtland concept from 1987, linking the needs of the world's poor to development and the environment which has informed the legislation in Wales.[5]

The concept of a just transition has been evolving since the Paris Agreement, and is consistently supported in policies related to energy, environment and climate (Heffron and McCauley 2018). The just transition approach aims to reduce inequality by applying actions that achieve just or fair and equal outcomes. In the areas of climate, energy and environment, the application of a just transition includes distributive, procedural or restorative justice. This could lead to different outcome in each field, and Heffron and McCauley (2018) propose applying these different understandings in an integrative way. The concept can be more simply expressed as:

[5] According to Baker (2016), sustainable development and sustainability are different concepts and terms should not be used interchangeably. Sustainability is an ecological concept, referring to the ability of an ecosystem to adjust over time. In policy terms it has come to mean the goal of policy. Sustainable development shifts the focus to the role of the environment and the economy in societal change.

> Just Transition: a just transition would consist of a dual commitment to human well-being (with respect to income, education, and health) and sustainability (with respect to decarbonisation, resource efficiency and ecosystem restoration). (Swilling et al. 2016)

Just transition reflects the desire to ensure a positive and fair outcome for all and the planet. The definition includes a recognition that addressing income inequality through economic processes only is insufficient when we consider the potential impacts on the environment, society, economy, and culture (Dasgupta 2021).

Transition towards sustainability is not an easy task for governments. Existing economic structures have not delivered positive just outcomes across society (Heffron and McCauley 2018). The current economic model of development is already a source of environmental and societal challenge (Horne et al. 2016). Significant societal transitions, like the Industrial Revolution, have had positive as well as deleterious economic benefits for Wales due to how our pool of natural resources and labour have been used (Wang and Eames 2010). Fitting our natural environment and societal life into the production needs of the steel, coal and later light goods manufacturing and call centre industries that have dominated the economies of Wales created a significant series of inequalities due to redeployment uncertainties, resource limitations and technological advancements (MacBride-Stewart 2020). In the same way, as the environment is boosted in economic development, there will be further uncertain social, economic and environmental changes ahead (Stroud et al. 2014). In particular, the transition towards a 'green economy' may have significant effects on previously deindustrialised regions, if existing societal inequalities are not addressed.

Futures thinking has been embedded in the concept of sustainable development since the original United Nations (UN) report Our Common Future (Brundtland 1987). It establishes the important premise that decisions made in the present will have longer-term societal, economic and environmental impacts. This understanding is embedded in the Well-being of Future Generations (Wales) Act 2015: 'Sustainable development means that the needs of the present generation should be met without compromising the ability of future generations to meet their own needs.'

Futures thinking meets a desire to understand and possibly predict the needs of future generations, alongside efforts to understand how environmental, societal and economic changes might shape their future needs in the longer term. It includes a commitment to understanding how to measure and assess whether the conditions under which societies live and develop are staying the same or are reducing. This is the role of the United Nations Sustainable Development Goals (UN SDGs) and indicators. While the UN SDGs can provide a body of information about the global picture, there has been some frustration by development thinkers that addressing these goals creates a partial view, as they do not fully facilitate understanding of the drivers of change or of unintended or unexpected changes. In this view,

the intention to safeguard the interests of future generations cannot be met. Futures thinking is needed in addition to the UN SDGs.

Bringing critique to existing policies by thinking about the future brings new perspectives to a problem. This has underpinned our review on inequalities in Wales. However, as with sustainable development and just transition, different approaches to futures thinking are evident in academic, policy and trans-governmental frameworks.

What we set out below differs from the approaches taken previously with health and inequalities because of our focus on sustainable development and a just transition. Understanding existing intersecting socio-economic inequalities provides a platform to avoid the unintended consequences of new climate and work policies. By ensuring their redistributive intent in the short term, we may avoid entrenching new inequalities in the long term. This approach also ensures policy changes in work, climate and demographics are viewed as intersecting: that is, shaped by each other.

THE INEQUALITY CHALLENGES POST COVID-19

Thinking about future changes in work, climate and demographics and how they might impact on inequality now needs to consider the impact of COVID-19 on further entrenchment of existing inequalities. This has been an unequal health crisis in terms of illness and deaths and of social, economic, cultural and environment impacts. The virus followed the existing contours of disadvantage.

Large-scale, multidisciplinary reviews, such the British Academy's (2021a, 2021b) COVID Decade reports (on impact and policy changes respectively), show that many of the inequalities predicted in the future are regarded as the accumulation of existing inequality trends. These inequalities are expected to be embedded into the future if we (government, organisations, and societies) go back to 'business as usual' (Bambra and Lynch 2021). The COVID-19 pandemic has also been described as 'syndemic', meaning that health, poverty, and inequality risk factors are "intertwined, interactive and cumulative" (Bambra and Lynch 2021). The normalisation of inequality is evidenced by the ways communities continually respond to 'plug the gaps' when public policies fall short – from food banks to the management of community forests.

Before the pandemic, households were in an increasingly precarious position, particularly those suffering from a lack of wage growth at the bottom of the distribution of earnings (Blundell et al. 2020). Deregulation of employment conditions has fostered a rise in agency, casual, temporary and zero-hours contracts, creating significant disparities in job security and the possibility of job and career progression (Blundell et al. 2020). Job insecurity and lack of wage growth is most prevalent for younger workers (Clarke and D'Arcy 2018), and women and some ethnic minority populations are over-represented in low paid, insecure work (TUC 2020a). Wales has a higher proportion of insecure workers, at 13.1%, than Scotland and all the English regions (TUC 2020b). These groups, and disabled people, were also those most negatively impacted by the 2008 recession and subsequent 'austerity' policies (Portes and Reed 2018).

The UK's social insurance system is the one of the least generous of all EU countries (Bell 2020). Post-pandemic, rising debt, insecure housing and increased poverty are real fears. With the pandemic occurring against a background of economic and social inequality, these aspects are as necessary to understand as health inequality (Bambra and Lynch 2021).

The lockdown of society in March 2020 immediately impacted health, work, relationships, and access to the basics of life, including food and transport. Differential impacts on population groups were immediately apparent. In Wales, workers in shutdown sectors (retail, childcare, hospitality, accommodation, etc.) were more likely to be under 25, women or from an ethnic minority background:

> This asymmetric impact makes it likely the pandemic will exacerbate existing inequalities, and a particular focus of the recovery effort should be to prevent the economic shock from having long-term effects on the incomes and employment

> opportunities of women, the least well-off, those from Black, Asian and minority ethnic (BAME) backgrounds, and younger workers. (Rodriguez 2020)

A clear intersection between low paid, precarious working in shutdown sectors and gender, ethnicity, disability, and age meant that these workers were more likely to be furloughed or lose their jobs (Adams-Prassl et al. 2020). Employees in shutdown sectors were able to benefit from a rapid and substantive programme of support that has saved many jobs, The Coronavirus Job Retention Scheme, if their employers were willing to engage in the scheme. Self-employed workers could apply for the Self-Employment Income Support Scheme if they met the bounded definitions of self-employment.

At the end of July 2020, 9.6 million employments (32% of all eligible employments) had been furloughed in the UK (HMRC 2020). In Wales, 36% of workers were furloughed (Adams-Prassl et al. 2020), a lower percentage than London and the Southeast and lower than some other UK regions. It is likely that the high level of public sector employment in Wales led to a higher percentage of workers continuing to work but from home.

In Wales, as at 28 February 2021, 93,100 women and 82,100 men were furloughed – accounting for 53% and 47% of all furloughed employments respectively (Welsh Government 2021a). This follows the national pattern where more women than men have been furloughed. Furlough take-up rates varied widely – from 10% (Blaenau Gwent) to 19% (Conwy) (Welsh Government 2021a). Furloughed workers were also more likely to think they would lose their job in the short/medium term and were more likely to be searching for a new job than non-furloughed workers (Adams-Prassl et al. 2020).

Mothers were 50% more likely to have stopped work than fathers if they had school-aged children, and if as predicted furloughed staff are more vulnerable to redundancy, we can expect to see a higher unemployment rate for women and some ethnic minorities (British Academy 2021a). Women were less likely than men to receive the 20% employer 'top-up' to the Coronavirus Job Retention Scheme (Adams-Prassl et al. 2020). This is linked to holding a higher share of insecure temporary and casual contracts.

However, many workers couldn't be furloughed. The importance of the 'Foundation' or 'Everyday' economy became visible as we noted how we relied upon carers, shop workers, delivery drivers and transport operators to sustain the basics of everyday life. They were, perhaps all too briefly, and while at greater occupational risk of contracting COVID-19, elevated to the status of 'keyworkers' alongside nurses, doctors, teachers, rubbish collectors, police and public administrators.

Rapid policy responses also covered rent and mortgage holidays and restrictions on evictions and repossessions. Temporary accommodation was provided for over 7000 homeless people

in Wales between March 2020 and March 2021.[6] Households in receipt of Universal Credit received a vital £20.00 per week uplift, but without the swift addition of hundreds of food banks and their volunteers, more households would have needed to make the choice between heating and eating. However, households on non-working legacy benefits, such as Employment Support Allowance, mainly taken up by disabled people or those who are long-term sick, did not receive an uplift.

Men's employment rate was down 2.8% year on year, and women's 1.1%. Those registered as unemployed (in receipt of benefit and seeking work) increased from 41,000 in April–June 2020, to 66,000 in November–January 2021 (Statistics Wales 2021a). In March 2021, there were new 113,675 Universal Credit claimants in Wales, up 53,000 overall year on year (ONS 2021a). Men claiming Universal Credit rose from 35,380 to 68,760, and women from 24,010 to 44,915 (ONS 2021a).[7]

In the three months to February 2021, the unemployment rate was 4.8%; this is the highest rate since October 2017 (Statistics Wales 2021a). Unemployment may have peaked at 5% but loss of working hours has continued from 2020 into early 2021 (Wilson 2021). This may result in further underemployment and associated loss of earnings. Low paid manual work is forecast to decrease, and much of UK jobs growth in the first quarter of 2021 was in highly skilled jobs, particularly science and technology occupations (Wilson 2021) – occupational groups in which women (Arad Research, 2020), minority ethnic groups and disabled people are underrepresented at senior levels.

The Coronavirus Job Retention Scheme can be credited with avoiding mass unemployment and saving many lives. However, it is also an example of a policy that was made on a universal basis, best suited to permanent, full-time workers, without considering the wide variety of less secure working patterns and contract types. The original eligibility criterion for 'furlough' was working in a shutdown sector. There was no indication that parents could ask to be furloughed given that school and nurseries were closed (Women and Equalities Select Committee, 2021). It took until July for the UK Government to change the guidelines so that employees could ask their employers to be furloughed for this reason.

In evidence to the Women and Equalities Select Committee's Inquiry into the Gendered Economic Impacts of COVID-19, Pregnant Then Screwed, the women's campaigning group, argued that the design of the Coronavirus Job Retention Scheme had led to an 'unfair division of domestic labour' and increased the risk of women being 'earmarked for redundancy' (Women and Equalities Select Committee, 2021). Women's loss of attachment to the labour

[6] COVID: Cardiff Homeless numbers down 90% since pandemic, BBC Wales News, 30 March 2021: https://www.bbc.co.uk/news/uk-wales-56565048

[7] The experimental ONS Claimant Count consists of claimants of Jobseekers Allowance and some Universal Credit claimants. The Universal Credit claimants that are included are 1) those that were recorded as not in employment (May 2013–April 2015), and 2) those claimants of Universal Credit who are required to search for work, that is, within the Searching for Work conditionality regime as defined by the Department for Work & Pensions (from April 2015 onwards) As Universal Credit roll-out continues numbers in this series will rise.

market was further threatened when the new Job Support Scheme was announced in September, as the provisions provided a disincentive to employers to retain part-time workers. The Institute for Employment Studies noted that almost 90% of redundancies in the July–September period were among part-time workers (IES 2020).

The British Academy report cites living in a more deprived community, being economically disadvantaged and being in a minority ethnic group as increasing risk factors for COVID-19 and associated restrictions on movement and working:

> Those already affected by existing structural inequalities have been exposed to greater numbers of intersecting stressors during the pandemic, as well as having fewer resources to be able to cope with them. (British Academy 2021a)

These concerns were echoed by our equalities and civil society research participants:

> *Poverty and socio-economic disadvantage – look at this through an intersectional lens. I'm worried about further entrenchment … My concern is that we entrench multiple layers or, however, we want to call it multiple layers of discrimination and inequality so it's sort of the people we know least about we're going to get know even less about. My children's generation is determined by their experiences of this pandemic, how will this impact their lives?* (Discussion Group Participant)

Existing adverse labour market conditions for women in low paid occupations, disabled people, young people and some ethnic minority groups made these groups and workers in shutdown sectors and single parents vulnerable to the economic shocks of the pandemic. It is likely that these groups will find it most difficult to recover working hours or gain new work.

The rapid shift to remote working from home, in which the digital infrastructure in Wales coped impressively, had positive and negative effects, and has changed the future of work (Green et al. 2020). Homeworking in Wales during the pandemic rose from 3.8% to 36.8% (Felstead 2021). This accounts for 485,000 people working from home in April 2020. After falling during the summer 'opening up' in 2020, figures were at 308,000 in November 2020. Felstead (2021) finds that:

> 56% of respondents from Wales said that they could not work at home, even if they and their employer wanted them to do so. This is a much higher rate than all the English regions, suggesting that the potential for homeworking may be more limited in Wales.

Employees who could work at home were predominately degree educated or in high-quality jobs and well paid (Felstead 2021). Within these educational parameters, homeworking varied little by gender, disability and ethnicity (Felstead 2021) However, women took responsibility

for most of the care work and had less leisure time than men (Power 2020). A Fawcett Society survey also found that:

> BAME people working from home are more likely to say they are working more than prior to lockdown, with 4 in 10 (41% women and 40% men) agreeing compared with 3 in 10 white people (29% women, 29% men). Nearly half of BAME women (45%) say they are struggling to cope with the demands on their time, compared with 35% of white women and 30% of white men. (Fawcett Society 2020)

Beyond employment, COVID-19 impacts included variation in hours of home-schooling, which may widen socio-economic inequalities. Taylor (2020) reported '2 in 5 children in Wales (40.1%) spending 10 or less hours on schoolwork whilst at home, whereas 15.4% of children spent more than 20 hours a week doing schoolwork'. Taylor's research also highlighted increased anxiety about not catching up on schoolwork. Access to electronic devices and a decent Wi-Fi connection sufficient for online learning and teaching was unequal:

> [In Wales] 53% of primary school-age children are said to have their own computer, laptop, or tablet available for schoolwork, and 40% have access to a shared device. 74% of secondary school-age children have their own computer, laptop or tablet available for schoolwork and 25% have access to a shared device. (Welsh Government 2021b)

Most parents reported satisfaction with the schooling available and felt able to support their children's learning. However, only around a third of parents felt confident to assist their children with learning in Welsh (Welsh Government 2021b).

Between week 11 (week ending 13 March 2020) and week 26 (week ending 26 June 2020), 34% of deaths in Wales were among care home residents – significantly age related (Bell et al. 2020).[8] In England and Wales men and women working in social care had significantly higher rates of death involving COVID-19: 50.1 deaths per 100,000 men and 19.1 deaths per 100,000 women compared with the average for all occupations – 19.1 deaths per 100,000 men and 9.7 deaths per 100,000 women (ONS 2020a). In the first wave of COVID-19, death rates were disproportionate within ethnic communities, affecting Black and Southeast Asian communities particularly (Ogbonna 2020). In the second wave, people from Bangladeshi and Pakistani communities have been disproportionately affected and linked to socio-economic deprivation, overcrowding and being in frontline occupations (Mathur et al. 2021).

There was an increase in reporting of domestic violence, which includes a possible mix of increased incidents, better recording, increased severity and a 65% increase in calls/contacts to the National Domestic Abuse Helpline between April and June 2020, compared with the first

[8] In England and Wales over 90% of care home residents, and in Scotland 92% of all people, who died had at least one pre-existing health condition, the most common of which was Dementia and Alzheimer's disease (ONS 2020a).

three months of the year (ONS 2020b). April–June monthly comparisons 2019/2020 show increases in violence against the person crimes flagged as domestic abuse related, standing at 54,475 crimes in June 2020 (England and Wales), and calls to national helplines again increased at the end of the first lockdown (ONS 2020b).

An examination of psychological well-being and the prevalence of clinically significant mental distress in a large sample 11 to 16 weeks into lockdown showed a large decrease in well-being from pre-COVID-19 levels (Gray et al. 2020). The UNITE survey of workplace representatives in occupations that were working throughout the pandemic (mainly in health and social care) found that 83% of them were reporting an increase in requests for assistance with mental health issues, and 40% reported an increase in reports of bullying (UNITE 2021).

Other issues were raised in the participant discussion group:

> *From older people's perspective, [there has been a] disproportionate effect on older people. Social care, those living in care homes, vast majority of deaths in Wales were people over 60. Lots of older people will have experienced multiple bereavements in the past year. Fear that older people will get left behind, many will be living with mental and physical deterioration over the past year.* (Discussion Group Participant)

In the weeks just prior to the start of the pandemic in March 2020, there was heavy rain. Instead of the previous years' floods being '100-year floods', several South Wales communities were flooded again. While dealing with COVID-19 and lockdowns, the communities faced months in temporary housing, and some were unable to get insurance on their homes. Many were young or low-income people who had bought the houses because of their lower-than-average cost. These communities – residential homes and small businesses – faced the dual challenges of a pandemic and climate change event. As noted in our group discussions:

> *COVID had shone a light between inequality and environmentalism. Air pollution disproportionately affects more deprived areas. Access to gardens and private green space. Relationship to mental health and access to active travel. Use of single use plastic and impact on urban areas.* (Discussion Group Participant)

The restrictions on travel reduced global pollution (Community Mobility Reports 2021). However, closer analysis of the data in Wales shows the reduction in carbon dioxide was temporary, and there was no decrease in other air particulates damaging to health (nitrogen oxides and particulate matter) (Welsh Government 2020a).

There were other unintended effects of changes in human activities caused by lockdown measures. Nature sounds were reported to have returned in some parts of the world (McNeely 2021). There appeared to be a greater presence of wildlife in urban areas, both in global reports (Vardi et al. 2021) and in parts of Wales (e.g. BBC News reported goats on high streets in Llandudno). Subsequently, a return to recognising the value of nature was also witnessed. People were reported to have increased the time they spent outdoors and especially in green

spaces. Time spent outdoors and access to nature were both found to be good predictors of mental health during lockdown periods (Hubbard et al. 2021). However, more sensitive indicators suggest that while changes in the perception of animal presence – especially birds and birdsong – were initially thought to represent a return of nature, this increase was due to detectability as traffic noise decreased (Gordo et al. 2021). No long-term changes to nature accessibility have been recorded for communities where transport infrastructures remain the same, and many green spaces remain inaccessible as a result (Burnett et al. 2021).

These new or exacerbated inequalities and the possibility for hope and renewal now, need to be considered as we address future trends and 'build back'.

FUTURE OF WORK

This section reviews the literature on the changing future of work including automation, digitisation, artificial intelligence, 'green' sectors and remote working. It considers potential economic and social impacts and how Wales might meet forthcoming challenges within education, adult learning and training.

Wealth and income inequalities widened considerably in the 1980s (Hills et al. 2010) and widened again following the 2008 recession, particularly for young people. The same groups that were disproportionately impacted by tax and welfare austerity policies in the decade to follow - low income, women, Black Asian Minority Ethnic (BAME) and disabled people (Portes and Reed, 2018), were further negatively impacted during COVID-19, and are predicted to be hardest hit by any resulting recession, unemployment, or inflationary effects (British Academy 2021a).

If we had asked ourselves in the 1970s what more equal outcomes might look like for the next generation, might we have tried harder to tackle the systemic inequalities that continue to reproduce advantage and disadvantage in education and the labour market?

The National Equality Panel's report *An Anatomy of Economic Inequality* (Hills et al. 2010) looked back over 30 years of educational attainment, employment, earnings, income and wealth by socio-economic groupings and the gender, ethnicity, and disability nexus. They found it was possible to predict poor educational outcomes for children of disadvantaged parents by the age of three, and that the social mobility of the post-war era had stalled – the 'rungs of the ladder are now further apart' (Hills et al. 2010). The research demonstrated how middle-class parents could work the system, ensuring that they were first in line for limited public services – making it more difficult for the principle of universalism to be applied in practice. It also showed how their income supported their children's additional learning, academically, physically, and culturally, enabling them to transmit their wealth through generations.

The National Equality Panel report concluded that the interventionist policies of the Blair and Brown era, through policy and programmes such as the introduction of the minimum wage, Sure Start, child and working tax credits (including moving payment from 'wallet to purse'), effectively stalled the growth of wealth inequalities, but these policies were not successful in reversing it. The wealthiest top 10% of the population in the UK now own 50% of all wealth (Lansley 2021), and this 10% own ten times more wealth than the next 40% of the population.

The corollary report to the National Equality Panel, *An Anatomy of Inequality in Wales*, found that the top 10% of earners had eight times more annual income than the bottom 10% in Wales, and that disabled people and ethnic minorities (particularly people with Bangladeshi or Pakistani heritage in combination with Muslim faith) had the poorest outcomes across all the categories of education, employment, earnings, income, and wealth (Davies et al. 2011). Women 'took the wooden spoon' within all the categories apart from education but their

higher qualifications were not realising their value in the labour market due to occupational segregation and stratification, and associated differences in working hours and contract types (Parken et al. 2011; Parken and Ashworth 2019). It would be timely to rerun this analysis in Wales, post-COVID-19.

In Wales between 1994 and 2014, women's participation in the labour market increased from 62% to 71%, which is from one of the lowest rates in UK countries and regions to almost the UK average (Parken 2016). However, women's continued concentration in low paid service jobs in the private sector, in health and education, and segmented in lower valued occupations within the professions, means that Wales' level of gender segregation had changed little in 30 years (Parken 2016).

The shift to 'the knowledge economy' in the 2000s was overlaid by stubborn patterns of gender segregation in occupations, working hours, contract type and pay (Parken and Rees 2011). Using Etzkowitz and Leydesdorff's (1995) concept of the 'Triple Helix' in regional knowledge economy systems (the interaction between universities, government and industry), Parken and Rees (2011) showed that in Wales, men held almost all the key positions in knowledge innovation in science, in government - allocating research and investment funds in government and in business - using these funds to synthesise the knowledge for commercialisation.[9] Further, they demonstrated that the concept of innovation itself was gendered, as it excluded innovation in health, education and management sciences where women were present in key science positions (Parken and Rees 2011) Given that gender segregation persists, without intervention, the same inequalities could be transposed within new digital and technology occupations and the potential 60,000 'green jobs' that could be created in Wales (Future Generations Commissioner for Wales and New Economics Foundation 2021a).

The following section outlines the debates and predictions for an automated and digitised future and considers how Wales might break the cycle of reproducing inequalities as we move towards new economic and environmental eras.

DEBATES AND PREDICTIONS

Current debates on the future of work, and in particular the impact of automation, digitisation and artificial intelligence, tend to offer either utopian or dystopian scenarios (Cruddas 2020): on the one hand, mass unemployment, social upheaval and societal breakdown, and on the other, the automation of routine work; freeing humans to work less and concentrate on highly creative, satisfying jobs.

In the utopian version, there will be less paid work but "numerous routes to self-actualisation and enhanced transhuman possibilities" (Cruddas 2020), with opportunities for technology to solve the climate crises and structural unemployment. This perspective offers a vision of the

[9] The 'knowledge economy' is an umbrella term covering knowledge intensive inputs to create products and services, as opposed to those requiring physical or natural resources inputs (Powell and Snellman 2004).

future in which boring tasks and 'rubbish' jobs are swept aside, leaving creative, problem-solving work to humans. This perspective, in which the political ambition of full employment may not be possible, has created interest in Universal Basic Income.

In the dystopian version, we face a post-work nightmare of escalating inequality, with humanity subservient to technology (Cruddas 2020). In this 'no one is safe' scenario, there is mass unemployment, the sweeping away of routine manual labour and the deskilling of lawyers, accountants and health professionals as their work is digitised. Prior analyses suggest that a shift to a technology-based economy does not guarantee economic growth (Brown 2019), and that previous industrial revolutions have exacerbated inequalities (Brynjolfsson and McAfee 2014).

A shift to an automated, digitised economy overlays predictions that flexible temporary work is expected to grow, impacting previously secure occupations (rise of specialist contract workers), with further labour market deregulation, challenges to the welfare state from decreasing tax revenues and the rise of 'superstar' tech firms (platform businesses) which erode employment rights (ILO 2018). Almost 90% of job losses worldwide due to automation have been in manufacturing, therefore impacting men's employment more significantly than women's (Monkelbaan 2021). The threat to jobs at all skill levels, and to women's jobs in professional and personal services, is likely to grow as automation progresses. Globally, changes will impact men and women within their currently gendered sectors and in the potential share of 'yet to be gendered' new jobs:

> In a scenario where automation unfolds on the scale of past technological disruptions, women and men could face job displacement and potential job gains of a broadly similar magnitude. In the ten countries studied, an average of 20 percent of working women (107 million) could lose their jobs to automation versus 21 percent of men (163 million) by 2030. Rising demand for labour could imply 20 percent more jobs for women, compared with 19 percent for men, assuming their shares of sectors and occupations hold. Entirely new occupations will also be created, but approximately 60 percent of new US occupations have been in male-dominated fields. (McKinsey Global Institute 2019).

While we cannot compare directly between countries, patterns of gender segregation are remarkably stable across developed countries, and research considering the gendered effects of automation in Wales finds that 65.1% of the jobs at highest risk are in occupations mainly worked by women (Fawcett and Gunson 2019).

However, there is enormous variation in the estimate of jobs that might be automated and an argument that the focus should be task automation and job replacement, rather than job displacement. Brown, who undertook a review of potential digital futures for the Welsh Government in 2019 (Wales 4.0, signifying the 4th Industrial Revolution), notes a striking inconsistency in 'the estimation of threat' levels in the worldwide literature, and that there is

little Welsh specific data on the potential for job displacement/creation. Different methodologies are in use and estimates tend to be based on the number of jobs that are automatable, which is not to say that they will be automated as such decisions are dependent on achieving cost efficiencies (Brown 2019). Where wages are low, as they are in Wales, cost efficiencies may be insufficient to make automation attractive (Brown 2019).

In contrast, Bell, Bristow and Martin (2017) argue that a third of the Welsh workforce are in routine low skilled jobs, which could be most at risk to routinisation/standardisation. However, unemployment threat levels change when task change is considered:

> When using a task, rather than occupational approach, the proportion of jobs at risk of automation declines. Frey and Osborne (2013) – one of the most widely reported studies into the impact of automation – estimated 35 per cent of jobs in the UK are highly automatable based on occupations. However, Arntz and colleagues [2016], as part of their work for the OECD, suggested only 10 per cent of jobs in the UK will be lost to automation based on tasks. (Brown, 2019).

Based on a combination of international and UK studies, Brown shows predictions of 19% of tasks will be automatable in Wales by 2037, and 46% of jobs will be automatable but there is no timeframe available for this prediction (2019).

This focus on task changes rather than occupational change is becoming the more prevalent. The Office for National Statistics (ONS) use a task-based methodology, which accounts for occupations at high risk of automation and those that contain tasks that cannot be automated (ONS 2019a). Analysing jobs automated between 2011 and 2017, the ONS estimate jobs lost to automation at around 7–8% or 1.5 million in England (2019a). High-skilled occupations such as higher educational teaching professionals and medics are at less risk of task automation, while waiters, shelf-fillers and elementary sales professionals are at higher risk.

The report notes that women, young people, and part-time workers are at greatest risk, given their concentration in low skilled work (ONS 2019b). The rate of jobs automation could also be reducing, perhaps because many services have already been automated to replace routine tasks (self-service supermarket and petrol station checkouts, banking increasingly online) (ONS 2019b).

A corollary report for Wales is not possible due the small data sample size.[10] However, we may need to be pragmatic about the approach to obtain further Wales estimates, as using the Annual Population Survey, the ONS has been able to estimate the number of jobs at high risk of automation by ethnicity. Their finding is that 4% of Bangladeshi and Chinese workers jobs, 3% of mixed/multiple ethnic groups and 2% of white workers and Black African, Caribbean British jobs are at high risk (ONS 2020c).

10 The analysis uses the UK Programme for the International Assessment of Adult Competencies.

Brown warns that digital companies such as Amazon represent an outflow of monies, and that since Wales has the lowest level of productivity and earnings of the UK regions (McCann 2020 in British Academy 2021a), Wales' business base is particularly vulnerable to loss of ownership of technology and its associated revenues. Brown recommends further research and investment in strategic thinking in Wales, potentially via a Futures Commission and Lab for Work@Wales 4.0 (Brown 2019). We concur and suggest that new primary research always integrates assessment of the potential for existing occupational inequalities to be reproduced in new employment opportunities.

To avoid slipping further towards a low skilled, low waged economy, Brown's review of the 4th Industrial Revolution for the Welsh Government is keen to avoid a passive mitigation scenario (Brown 2019). Instead it argues that Wales should set itself the aim to become a world leader in data capture and management, underpinned by Welsh Government's vision and Standards for Fair Work, and the environment and social justice principles:

> Without radical action, the Welsh economy will not generate the wealth required to fund public services and large numbers of workers will be locked into a race to the bottom in jobs that are susceptible to automation. (Brown 2019).[11]

Cruddas (2020) concurs, arguing that the 'dignity of labour' should be key to thinking about our future society, which should be based on the premise of greater social and economic justice. In summary, the literature offers a vision of innovative technologies that offer the possibility of improved job quality, business productivity, public services delivery and individual well-being, as well as job and task displacement. There will be continuity and change; it is likely that job replacement will be more significant that job displacement – around half of all jobs may remain stable but tasks will change (World Economic Forum 2020).

That the focus should be on job replacement (new types of jobs) and task changes was reinforced during our discussions with think tanks, equality organisations and academics. Therefore, a concentrated policy and workplace investment in job redesign is vital, along with the retraining and upskilling needed to support it. Job redesign is key but difficult to achieve in the abstract. We will need individual workplace planning, supported by sector research, and worker engagement, with a view to new social and employment protections (ILO 2018; Unison 2018). We discuss such interventions in our section on potential solutions below.

Beyond the changes that automation may bring, the Future Generation Commissioner for Wales and the New Economics Foundation (2021) have considered the current male dominance

[11] The Welsh Government accepted the recommendations of the Fair Work Commission's Report, *Fair Work Wales* (2019a). Fair Work is defined as that in which workers are 'fairly rewarded, heard and represented, secure and able to progress in a healthy, inclusive environment where rights are respected' (Welsh Government 2019b). The proposed Social Partnerships Bill will introduce measures to improve employment practices, leveraging public procurement to support this aim.

and small proportion of ethnic minority workers in occupations that will contribute to a green economy. Their research estimates 60,000 'green jobs' could be created in Wales by 2030. There are also calls for care jobs to be included as 'green' on a low carbon output basis, and efforts made to recruit more men into the sector. Action will be needed to avoid transposing existing inequalities between economic eras.

Finally, although Wales had the lowest proportion of jobs that could be worked from home during the first lockdown (Rodriguez 2020), working from home could create new socio-economic occupational divides. During the Spring lockdown most managers, professionals, associate professionals (e.g., computer assistants, buyers, and estate agents), and administrative and secretarial staff (e.g., personal assistants, office clerks and bookkeepers) reported that they did all their work at home. This was up from between 5–9% before the Spring lockdown (Felstead 2021). Workers operating in lower skilled occupations continued to use the factory or office as their workplace both before and during the Spring lockdown. For example, more than four out of five operatives and elementary workers (e.g., machine operators, assemblers, and labourers) reported that none of their work was carried out at home in lockdown (Felstead and Reuschke 2020).

Whatever policies are adopted for changing economic and employment sectors, occupations and tasks, they should address labour market segregation and segmentation, or Wales 4.0 will be another industrial era in which in those already most able to take advantages of education, training, retraining, start-ups and investment are further advantaged.

INEQUALITIES TO BE ADDRESSED FOR A FAIR TRANSITION

This review looks at current inequalities within education, further and higher education and vocational training in Wales, and considers what will be needed to ensure fair transitions to changed and future occupations.

EDUCATION

Variations in attainment and subject choice by equality grounds are important for the future workforce. However, significant data gaps for ethnicity and disability remain. Just over half of school pupils attain the equivalent of five GCSEs at grades A*–C including English or Welsh and Maths (Social Mobility Commission 2021). In 2018/2019, girls' attainment was 10% higher than boys on this measure (Statistics Wales 2019). Boys, looked-after and disabled children are less likely to reach this landmark, which can open the gateway to further learning, better employment opportunities and higher earnings. At least it should do, but for women this can be counteracted by sector and occupational segregation. Ogbonna's report on the nexus between socio-economic inequalities and ethnicity concludes that:

> Some members of the BAME communities have continued to succeed in education and employment, with Indian and Chinese children achieving high attainment rates.

> Black pupils have lower attainment than white British pupils during early years' education. This attainment gap narrows at GCSE level with, for the latest period (2017–2019), 57.7% of black pupils achieving the Level 2 Inclusive threshold compared to 56.5% of white British pupils. However, for other BAME groups this gap is not narrowing; only 11.1% of Gypsy/Gypsy Roma pupils will meet this threshold. (Ogbonna 2020).[12]

Boys continue to outperform girls at the highest A-level grades (Statistics Wales 2021b). The Social Mobility Commission report on Wales finds that only 4 out of 10 Year 11 pupils study A levels at school with half going on to study in further education (2021). Gender segregation by subject remains, with 387 entries for ICT from boys compared to 120 from girls in 2019/2020; 1,427 boys studying Maths, compared to 901 girls; 50 girls studying Economics compared to 137 boys; and 771 boys taking Physics compared to 224 girls (Statistics Wales 2021b). Boys were 89% and 76% of entries for Computing and Physics respectively (Arad Research 2020), and girls were 78% and 62% of Psychology and Biology A-level entrants respectively (Arad Research 2020). Physics is particularly important given that Physics A-level is required to study Computer Science degrees and is not available to study at further education colleges (research interview). Such gateways continue to privilege academic study over the vocational qualifications we may need for Wales 4.0.

FURTHER EDUCATION

There are now 13 further education institutions in Wales following rationalisation. Of the 120,000 learners in 2018/2019, young people aged 16–19 were the majority of full-time students, taking A-levels, initial vocational qualifications or access programmes. As expected, older learners favour part-time pathways, taking a range of courses including basic learning, and vocational qualifications, often in health and social care, business administration and ICT qualifications (Buchanan et al. 2020). On broad subject categories and at NVQ Level 3 or equivalent, Engineering and Manufacturing Technologies are the most popular subject areas for boys (19% of boys' studies), Science and Mathematics (14%), followed by Construction, Planning and the Built Environment (11%) (Statistics Wales 2021c).[13] For girls, the most popular subjects at NVQ 3 are Health, Public Services and Care (28% of girls), Science and Mathematics 12%, Business Administration and Law (11%) (Statistics Wales 2021c).

APPRENTICESHIPS

12 At Key Stage 4, level thresholds represent a volume, or 'size', of qualifications at a specific level on the National Qualifications Framework. The 'Level 2 inclusive' threshold represents a volume of qualifications at Level 2 equivalent to the volume of 5 GCSEs at grade A*-*–C, including English Language or Welsh First Language and Mathematics or Numeracy. See Welsh Government (2020b).

13 The figures include all those studying preparation for work and life at foundation and next level; this is the most populous group for all students but has been excluded from these calculations to highlight specific vocational subject areas.

The need to address gender segregation and the under-representation of ethnic minorities and disabled people undertaking apprenticeships has long been recognised. As has the priority governments should give to addressing these inequalities (National Audit Office, 2019). The British Academy report on renewal post-COVID-19 provides a simple summary:

> Apprenticeships at all levels are a more common pathways for boys, people from lower socio-economic backgrounds and white people. (British Academy 2021b)[14]

Women's apprenticeship starts have grown at the lower levels, in part due to their introduction in occupations such as retail and care. The number of women starting apprenticeships has been growing, particularly at the lower levels, since the range of study was expanded into traditionally female occupations (National Audit Office 2019). However, women find it harder to attain employment at the end of an apprenticeship compared to men, and immediately experience a gender pay gap due to gendered clustering within sectors and occupations (TUC 2018).

People from ethnic minorities accounted for 4% of apprenticeship starts in Wales in Q1 and Q2 2019/2020, women were 86% of the health and social care starts, and men were 99% of construction starts (Statistics Wales 2021d). Brown (2019) noted that just 50 women (9.5%) were in apprenticeship training in the fields of IT, software, web and telecoms in Wales in the 2017/2018 academic year, compared to 505 men, reinforcing the concern that Wales 4.0 is an industrial transformation for men.

HIGHER EDUCATION

There is a substantial literature on how inequalities in education and training lead to unequal access to higher education and subject clustering across the inequalities grounds. These are noted in the recent Ogbonna COVID-19 report:

> Attainment gaps are also evident at higher education level. While there is an overall increase in participation in higher education, white British students in Wales have an attainment lead of 8.5 percentage points over BAME students. (Ogbonna 2020)

The Welsh Government's Women and STEM (science, technology, engineering, and mathematics) Board continue to oversee progress on the Women and STEM Inquiry (2016a). A recently commissioned data review finds that women's enrolment in science courses increased between 2013/2014 and 2017/2018 in STEM subjects but that gender divisions persist. Women are 14.7% of Engineering and Technology students, 15% of Computer Science students but encouragingly 40% of Physics and 39.1% of Maths students (Arad Research 2020). On the

[14] The four main apprenticeship, types are Intermediate (Level 2), Advanced (Level 3), Higher (Foundation Degree and above) and Degree (Bachelors or Masters).

accepted understanding of gender balance as 60/40 ratio, the latter two subject areas are now in gender balance. However, further interventions will be needed across equalities areas to create a diverse workforce that can offer the different perspectives needed to create an inclusive digital future (Wajcman 2020).

DIGITAL WORKFORCE WALES

The G7 average for women in the technology workforce is 30% (PwC 2020). Currently women make up less than 30% of the digital workforce in the UK; 32% of the energy sector (likely clustered in administrative and customer facing roles); and just 7% of board members in tech (PwC, 2020). In our data review for Wales, we were unable to access data for ethnicity and disability in technology occupations and, as Table 1 shows, so great is the gender disparity among most of these occupations that much of the data has been suppressed due to small sample sizes.

Table 1 shows that reliable data for women is only available for information technology and telecoms professionals, where women make up 16% of the occupational group, IT technicians (30% of occupation) and IT user support technicians (30% of occupation).

Table 1: Gendered technology related occupations, Wales

Occupation	Total	Men	Of Occupation Men %	Women	Of Occupation Women %
ICT directors	2400	2200	92%	200*	
Design and development engineers	3,500	3,000	86%	500*	
Information tech and telecoms professionals	27,400	23,100	84%	4,300	16%
IT specialist managers	6,200	5,100	82%	1,100*	
IT business analysts, architects and systems designers	4,000	3,600	90%	400*	
Programmers and software development professionals	10,300	9,100	88%	1200*	
Web design and development professionals	1,100	Not disclosed		Not disclosed	
IT and telecoms NEC	4,700	3,900	83%	800*	
IT technicians	9,000	6,300	70%	2,700	30%
IT operations technicians	3,400	2,400	71%	1,000*	

IT user support technicians	5,600	3,900	70%	1,800	30%

Source: ONS (2020d)
* Denotes a figure that is not given by the Annual Population Survey as it is too small to be statistically reliable. In these cases, a number has been included for women in the table for illustrative purposes only, and a % has been calculated for men in the corresponding column for illustrative purposes only. The number and percentage for women is difference between the total count and men in an occupation. NEC - Not elsewhere classified.

Table 1 shows that women are not only not leading the shift to automation, technology, digital and artificial intelligence, they are hardly present. Who is involved in shaping our digital future has implications for the 'Wales we want', as evidence shows that poor diversity in tech innovation has contributed to creating algorithmic biases which have been detrimental in, for example, automated recruitment systems (Wacjman 2020).

Of the broader category 'Science, Research, Engineering and Technology', men hold 82% of occupations (63,500) – with these occupations accounting for just 1.7% of women's employment in Wales, compared to 7.2% of men's (ONS 2020d).

Despite a myriad of recommendations to address these inequities, they persist. An assessment of progress on the action plan following the Welsh Government's Women in STEM inquiry is indicated. As noted by one of our research group participants, accepting recommendations doesn't necessarily lead to implementation:

> *Based upon the disproportionate effects on ethnic minority communities and killing of George Floyd … Race Equality Action Plan [was published …] but we have fears about the structures that will be put in place to monitor action plan. We do not [want] to keep talking about the issues, want to see action and accountability frameworks that will support the implementation gap.* (Discussion Group Participant).

We discuss the implementation gap further in our concluding section. Beyond this we identify areas for action to ensure equality and sustainability are mainstreamed in both public and workplace policy, to address lack of representation of women, ethnic minorities, and disabled people, in the policy renewal and concluding section below.

SUMMARY: FUTURE OF WORK AND INEQUALITIES

The economy and employment in Wales have suffered from deindustrialisation, the consequence of UK fiscal policies which widened wealth gaps in the 1980s, the 2008 recession and now the impact of COVID-19. Wales is a country with low Gross Value Added, vulnerable to the significant outflows of money that companies like Amazon and proliferating digital platforms such as UBER represent. Economic programmes in Wales must stimulate entrepreneurship and growth of existing businesses (including social businesses) in these areas (Brown 2019).

People in shutdown sectors have been more likely to lose their jobs, and those still covered by the Coronavirus Job Retention Scheme are at particular risk of redundancy when it ends. The evidence has shown that these risks pertain particularly to people working in low paid sectors on insecure employment contracts, and that these are disproportionately women, single parents, young people, and members of some ethnic minority groups. The COVID-19 generation of young people (Gen C) may be subject to long-term labour market scarring from unemployment. These possibilities remain uncertain as some experts expect the UK to make up the 8–9% fall in Gross Domestic Product (GDP) during 2020, through consumer spending with potentially inflationary effects (British Academy 2021a). This would return UK GDP to 1% below the level in early 2020 by the end of 2022 (British Academy 2021a).

Jobs in digital, automation, 'green' jobs, and health and social jobs are forecast to rise contemporaneously with task transformation across all industries, services and skills levels. Current patterns of gender segregation especially, but also on a socio-economic basis across many of the protected characteristics, will be reproduced and re-entrenched, creating new inequalities in employment, earning, income, wealth, and pensions (see demographics section).

At the very least, the shift to digital and 'green' could reverse existing labour market gains. Concerted efforts will be needed to ensure that Wales 4.0 does not replicate the white male, middle class control of analysis (new science and technological research from academia), research and government funding, and the commercial synthesis of new technologies that is at the core of current economic development models (Parken and Rees 2011).

If predictions that unpaid caring responsibilities will rise come to pass, women, who are likely to continue to carry the responsibility for caregiving, could be locked out of growing employment sectors. This unpaid care burden and the effect it has on creating occupational segregation could result in the reintroduction of a breadwinner/homemaker model. Ferree (2020) argues that this is what has occurred under 'populism' in the US as white working-class men's jobs have been lost.

However, the prevalence of low paid jobs in the UK does require two working adults in a household to avoid relative poverty (Tinson et al. 2014). Therefore, we may see a continuation of the present situation in which many women with lower educational qualifications or those with higher qualifications trade down, to work part-time in low paid services jobs to juggle work and care. The need for a universal care system for children and older people is clear.

Remote working has been suggested as a way of maintaining work-life balance, or for women the reality is more like a work/care balance. We also need to ask: 'Is remote working flexible working?' The enforced experiment during the pandemic resulted in work intensification and a reduction in some women's productivity due to interruptions for home-schooling (Felstead and Reuschke 2020). While home-schooling may not continue, evidence is beginning to show both work intensification and career-lag effects for women in professional careers (Flaherty 2020), and we risk a visible/invisible workplace/home division in which in-work employees are

favoured for progression and promotion. There is, in addition, the need to factor in the 39% of jobs that cannot be worked from home (Rodriguez 2020).

POLICY RENEWAL AND AREAS FOR ACTION

> *The 'robos' are coming is overstated, in addition the population is shrinking so the need for jobs is smaller … the problem is a skills mismatch between people's qualifications and the digital and emotional intelligence, creative skills we'll need.* (Discussion Group participant).

It is beyond the scope of this report to summarise and evaluate all current education, training, economic and labour market policies. However, given the evidence, our overall assessment is that policy has had insufficient impact on tackling long-term persistent inequalities embedded in labour market structures. The discussion below covers the most relevant existing policies, the Welsh Government's response to COVID-19 and recovery, and ideas for policy adaptation and improvement.

EDUCATION

During the first lockdown, the Welsh Government responded rapidly and in keeping with the social justice principles it has tried to embed in its distinct approach to equalities policymaking (Chaney 2009; Minto and Parken 2020). Free school meal vouchers were transposed to cash so that they could be spent locally in almost all local authority areas (Welsh Government 2020c). This also reduced the stigma of voucher use. Payments were also extended over school holidays, again a distinction to policymaking in England. In keeping with these efforts there are longer-term programmes displaying an equity approach to access to learning, such as the provision of period products within schools, and the 'uniform grant' (Welsh Government 2020d, Welsh Government no date).

In April 2020, the education minister announced a scheme to provide digital devices to school children for home learning (Welsh Government 2020e). It is estimated that 130,000 devices have been provided, along with improvements to digital infrastructure (Children's Commissioner for Wales 2021). However, digital exclusion gaps remain:

> In more than half of settings over 90% of learners have access to a digital device, and in a quarter of schools and colleges all learners are reported to have access, but 12% of schools had at least 20% of learners without access. (Children's Commissioner for Wales 2021).

The Welsh Government announced a £15 million extension to the Hwb EdTech programme in February 2021, which has already seen an investment of over £92 million to transform digital infrastructure in maintained schools since 2019 (Welsh Government 2021c). These interventions are welcome and redistributive, but it is too soon to assess their impact.

Attainment gaps for various socio-economic groups showed that the education system still does not produce equal outcomes. Socio-economic gaps accumulate from school entry age, so that by GSCE age, poorer students are 18 months behind their better-off peers (British Academy 2021a), and this restricts choices for moving on to further education.

The Welsh Government also has a distinct history of supporting early years education through the Early Years Pupil Development Grants (£700 per eligible pupil from 2019) and the Flying Start programme. However, Flying Start is only available in the most deprived areas, leading to deprived families on the boundary missing out by a few yards. A review of integrated early years systems for the Welsh Government concluded that there is no one country with a perfect system but that what is needed:

> Is to join up early education, care, and family support systems (which seem to be easier to fully integrate) with the health system, especially when there is disconnection between the health services that offer support at different stages in a child's life (e.g., post-natal to school age). (Pascal et al. 2019).

The Welsh Government has also developed a new curriculum for 3- to 16-year-olds, focused on maths and numeracy, languages, literacy and communication, and expressive arts (Welsh Government, 2021d). To be introduced in 2022, it has an emphasis on equipping young people for life, enhancing digital skills, empowering teachers to provide flexible learning suited to their students, and includes significant diversity elements (teaching about the histories of different ethnicities, new relationships, religion, and sexuality content and with a human rights focus) (Welsh Government 2021d).

Our evidence shows that to ensure long-term progress is made in tackling inequalities, early years programmes are vital (Marmot et al. 2020). Long-term support will be needed for the most disrupted learners, and the new curriculum will need to enable teachers to be proactive in addressing subject segregation by gender and sexuality, and ethno-religious nexuses (South Asian Muslims and Gypsy Roma Traveller communities have the worst schooling outcomes), to avoid continued occupational sorting by socio-economic parameters.

ADAPTING TO NEW AND CHANGING WORK

The evidence suggests a consensus on the components of building an automated and digital future that ensures the well-being of employees (World Economic Forum 2020; Deloitte 2020; Monkelbaan 2021; Brown 2019). This is a nexus of job redesign, improving job quality, strengthening social protections, improving governance of artificial intelligence and digital, embedding social dialogue, and addressing wage and income inequalities, as illustrated by the International Labour Organization vision for future work outcomes (Figure 1).

Figure 1: Outcomes of the future of work

Source: International Labour Organization (2018)

Not all these levers are within the Welsh Government's control. The Welsh Government Fair Work strategy and the Social Partnership Councils (when commenced) will underpin efforts, but the Welsh Government is reliant on the UK Government introducing the long-awaited Employment Bill as it does not have control of employment and social protection legislation.[15] We next review the levers at the Welsh Government's disposal by considering existing policy in these areas and suggested policy adaptations or improvements.

We have seen that men's jobs have been initially most impacted by automation in manufacturing and that transport and delivery jobs, also mainly worked by men, are also at high risk. Women's employment is at risk in the shutdown sectors in which they cluster; many jobs have already been lost and many may not return as restrictions are eased (retail, tourism, accommodation, and food). These low paid jobs are forecast to decrease and of equal concern is that the loss of working hours has continued from 2020 into early 2021 (Wilson 2021). This will impact on women, young people, and ethnic minority people in low paid work disproportionately (British Academy 2021a).

The proportion of women of women in full-time employment has been growing steadily since the 1980s, in part due to the impetus to meet rising living costs through dual-earner households or to seek financial independence to maintain a single household, and women (particularly white ethnicities) having fewer children, later (Roantree and Vira 2018). Women also continue to struggle against 'motherhood' and 'part-time pay penalties' in professional and managerial careers, with deleterious effects on progression and promotion (Parken and Ashworth 2019).

15 The Employment Bill, if brought forward by the UK government, is anticipated to include a right to request flexible working from the first day of employment and the right to request a permanent contract after 26 weeks continuous service.

The differently gendered experiences of changing work in different sectors will need specific attention.

Active labour market policies, both short and long term, will need to ensure that women can access the retraining needed to move from low paid unskilled or semi-skilled work to the technology and 'green' industries that are strongly associated with masculinity. Recent research also suggests the need to revalue and properly remunerate social care, which could also be included in the categorisation of 'green' jobs (Women's Budget Group 2020). Discussions with our participants echoed this view:

> *What I want to see is the caring economy properly rewarded. So, make caring a well-being goal, with care being valued and the care sector being invested in, and caring being a really good choice.* (Discussion Group Participant)

Discussants also wanted 'green' jobs to include nature restoration and tourism. A formula for addressing conflicts between economic development and green space is also needed (see climate section).

Based on the findings of the Inquiry into the Gendered Impact of Coronavirus, the Women and Equalities Committee called for access to free childcare to be extended to mothers who are unemployed, and for welfare conditionality rules to include retraining as well as job seeking for unemployed parents (Women and Equalities Select Committee, 2021). Beyond ameliorating the deleterious effects of current policies, the economic requirement for high-quality universal childcare should be reiterated, as more women will be needed in the workforce to address the shrinking and ageing of the working age population (Scott 2020). The jobs/care nexus for women is discussed fully in the demographics section.

We also suggest that the innovative Economic Contract, in which businesses seeking Welsh Government growth funds must commit to being a fair employer, includes targets for employing, training and reskilling workers in gender atypical jobs, and addressing the under-representation of disabled people and minority ethnic groups.[16] Our equality and policy group participants also called for a strengthening of the 'something for something' concept within the Economic Contract, calling for evidence that 'bad' employers who offer short-term, low paid jobs without training and progression have been refused funding.

The Future Generations Commissioner for Wales (FGCW) called for procurement conditions across all public spending in Wales to be strengthened to support the Economic Contract ambitions (2021b), and the Equality and Human Rights Commission (EHRC) Wales has called for the procurement duty under Welsh Specific Equality Regulations to be used to hold apprenticeship providers to account for poor diversity of learners (2018). The Gender Equality

[16] Commitments for a prosperous, green, and equal recovery were reiterated in the Welsh Government COVID response (2020f) and Economic Resilience and Reconstruction Plan (2021e) but without detail on how provision would change to more inclusive.

Review called for all the Welsh Specific Duties Equality Duties to be renewed and transformed from process compliance to action and outcomes focused (Parken 2018).

Long-term progress on equipping young people and enabling job and task occupational transfers requires the transversal application of the well-being and equality duties across economic development and employment programmes, Fair Work and the Social Partnership Council. A diversity of voices, work and business experiences will be needed to guide these discussions.

TASKS CHANGES: JOB REDESIGN AND NEW SKILLS

The evidence shows that the primary focus should be task change within job roles, and job replacement rather than job displacement. Our research group participants stated that this requires a huge investment in training/retraining for digital, green and care jobs:

> *[We] need large-scale investment but it needs to be bolder in what we invest in – e.g. care. We need to look at skills pathways.* (Discussion Group Participant)

> *Welsh Government will need to have in place radical programmes for reskilling people, there's a low level of adult learning and lots of people have had a 'gut full' of formal learning, like in [Further Education] it teaches last year's technology … it will need to be attached to work places but not the low quality work-based learning we've had … we need better basic skills for employability like a general level of education and an ability to learn, and numeracy and literacy and softer skills.* (Discussion Group Participant)

However, loss of devolved control over the Shared Prosperity Fund - now called the Levelling-Up Fund - is a severe blow to the continuance of the cross-cutting anti-poverty, equality and sustainability requirements that formed part of the European Programmes administered by the Welsh Government. This could have significant impact on the distinct agenda for social justice and promoting equality in Wales (Minto and Parken 2020). In the final Welsh Government 2021–2022 budget, 'Work-Based Learning' (supporting apprenticeships – £114m), Employment and Skills (£60m) and Careers Wales (£19m) are allocated spend. Any other spending on reskilling/training will have to come from 'other Welsh Government spending', which according to analysis from the Wales Fiscal Analysis Unit (Sion and Ifan 2021) offers limited scope for growth given the outlook and pressures on other areas of the budget.

Employers will be looking at job redesign and for rapid upskilling or reskilling for changing job roles, as will unemployed people who want to quickly enter employment. However, Wales has a low base for adult learning; tempting adults into workplace training and learning is not easy, especially for low earners and those who had a bad experience at school. Wales also has a history of workers' education, community-based learning programmes and the Wales Union Learning Fund – all of which will need to be scaled up and be reflexive to the different starting

positions and cultures of learners, and address stereotypes, discrimination, harassment and bullying within learning settings, all of which can have a disruptive effect on learning.

Changing tasks will, at a minimum, need to be underpinned by Fair Work principles, aiming for flexible, permanent work at, at least, the Living Wage, with job ladders or career pathways for progression (Parken and Ashworth 2019; Webb et al. 2018). Unison (2018) has set out a redeployment and training bargain, which calls for redeployment rather than worker replacement to be the default, and the full engagement of staff, whose job roles will change, in job redesign, and an entitlement to paid leave while retraining/skilling. The Wales TUC supports this and calls for the Welsh Government to set out a Just Transition Statement, demonstrating how it will jointly meet its climate change and fair work commitments (Wales Trades Union Congress (WTUC) 2020).

Such training will need to be less formal and more flexible than apprenticeships and Level 3 programmes (Wilson 2021; Buchanan et al. 2020). This requirement was reiterated in our discussions:

> *And training needs to be flexible, not the chalk and talk, and not full time or only in the daytime.* (Discussion Group Participant)

Funding while training will also be needed. The Welsh Government has maintained funding of the Educational Maintenance Allowance; however it is just £30 per week. This makes staying in education unattractive or unaffordable for many low income students. The Bevan Foundation has called for an increase to £45 per week and guaranteed funding for transport and lunches while on school or further education premises (2020a). The Wales TUC argue for the rapid upscaling of the Wales Union Learning Fund to support such retraining (2020). The Institute for Directors (IOD) argues that we shouldn't wait for employer/work-based learning programmes to be established. In evidence to the BEIS Select Committee (14 May 2020), the Institute for Directors suggested that the UK Government could speed up its response on training and skills, by directly engaging with the working age population, funding training through tax breaks for learners (Evidence Session 14 May 2020).[17] However, this would only assist those already employed, unless tax breaks were included for those returning to work from training.

In this review of future and post-pandemic recovery skills requirements, there is remarkable consensus about the need for 'soft' skills, adaptability, creativity and emotional intelligence as well as digital skills/data literacy (British Academy 2021b), data science and analysis across all sectors, fluency in numbers and independent working (Deloitte 2020). However, there was no consensus on creating new skills pathways that predict what skills are needed.

Buchanan (Buchanan et al. 2020) and Brown (2019) also call for further devolution of economic development to the Regional Skills Partnerships so that they are involved in encouraging demand-side economic and business growth. Job quality rises when demand rises in a tight

[17] Q145 https://committees.parliament.uk/oralevidence/372/html/

labour market (Green et al. 2017). This would mean that the Regional Skills Partnerships were proactive in supporting new and growing business in regional clusters, instead of reacting to skills demands from employers. In partnership with further education colleges, acting as business incubators and learning hubs, Regional Skills Partnerships would be proactive in creating demand for and identifying skills needs in accordance with the business base they foster (Buchanan et al. 2020).

This is akin to the 'dual-labour market' approach, in which employers, unemployed people and employees within sectors work together, with active labour market support, to identify demand and skills required to address skills mismatches (Webb et al. 2018). This approach was due to be trailed in Wales before the pandemic and could work well with the further education clusters and 'shining light' employers – those invested in fair work and corporate social responsibility (Buchanan et al. 2020) - and the Regional Skills Partnerships. Sector academies were also recommended as a central platform of employability schemes in the Green review for the Welsh Government (Green et al. 2017). Retail, hospitality, business administration, care, construction and 'green' sector academies, offering the full range of core skills, soft skill, and digital skills, could work well with the further education/Regional Skills Partnerships demand and supply approach.

There is scope for making skills pathways clearer, so that learners know what skills and training will be needed for digital and green jobs. We heard that current barriers to retraining must be addressed and a wider scope of subjects must be on offer:

> And things like for computer sciences you need a Physics A-Level but it's not taught at [Further Education] so if you miss out at school what's your way into this?
>
> *Things like the Personal Learning Accounts, they're a limited offer thing like manual handling and first aid, we need a wider range of subjects and community learning not just at [Further Education].* (Discussion Group Participant)

In summary, we have gathered evidence that urgent action is needed to meet the pace of change and address inequalities post-COVID-19. This need not conflict with a longer-term view of creating the kind of fair work digital society we want in Wales. The Wales Partnership Council argue that the rapid move to digital services in local government and the health service during the pandemic presages increasing demand from citizens for increased efficiency and improved standards of public service via technology (Wales Partnership Council, 2021). Chief digital officers in the UK, Welsh Government and the Welsh Local Government Association are all undertaking work to assess how to use innovative technologies. A rapidly digitising public service offers opportunity to create new quality, flexible, permanent and inclusive job roles.

Learning from the Scottish Government's digital and artificial intelligence strategies is also vital here. United Kingdom Research & Innovation funding has been awarded to a partnership of universities, which has led to an impressive set of case studies for automation in public services. By working in partnership with the university, the employers have access to bespoke research

on automating jobs and tasks, and, together with full employee engagement in job redesign, this has led to redeployment and reskilling, and several examples of improvements in job satisfaction and services (Findlay et al. 2016). For example, the automation of prescription filling reduced errors (Lindsay et al. 2017). We considered supporting such job redesign initiatives within workplaces is vital and would work well in concert with sector focused initiatives. Such programmes could address potential job losses, increase employee autonomy and make better use of professional skills, by automating standardised tasks. We recommend that public sector digital officers and universities work together to replicate this provision in Wales.

The need for specific entrepreneurship training for women has been recognised over many years in Wales through positive action programmes (Women's Workshop, University of South Wales Entrepreneurship Programmes and an element of the Women Adding Value to the Economy Programme). Another report for the Welsh Government demonstrated that the business support programmes were not adequate to meet the needs of women's start-ups and should adopt new gender focused guidance (Welsh Government 2019c). More recent research for the Welsh Government, considering 'COVID-19 and women's entrepreneurship', identifies how the pandemic impacted on the existing barriers – managing work and home while starting a business, accessible and targeted support services, and the need for more flexible funding sources (Jones et al. 2021). The report's recommendations include changing the applications, funding and access criteria to be inclusive of everyone – this is mainstreaming equality. Mainstreaming is about changing systems and structures, removing barriers. It offers longer-term solutions than positive action measures, although both can operate contemporaneously (Rees 1998).

New Programme for Government commitments for the economy and young and adult learners include introducing the Tertiary Education and Research (Wales) Bill through the Senedd, reviewing adult education to increase the number of learners, introducing a young person's 'guarantee' for under-25s to have a place in work, education or training – including a further 125,000 apprenticeships (Welsh Government 2021f). The programme also includes implementing the race equality action plan, paying a real living wage for health and social care workers and addressing the employment gap for disabled people (p.5). The Welsh Government will incorporate the UN Conventions for the Elimination of All Forms of Discrimination against Women and on the Rights of Disabled People into Welsh law (p.15); establish 'an equalities legal service' to provide support on unfair or discriminatory employment practices (p.15); and explore legislation to address pay gaps based on gender, sexual orientation, ethnicity, disability and other forms of discrimination (p.6). This potential Bill is welcome, given the historic difficulty, costs and backlog of employment tribunals in the UK. Proactive work with employers in Wales has demonstrated how properly funded research and change management programmes can embed long-term improvements to equality outcomes within workforce planning and development (WAVE programme; Parken and Ashworth 2019). This learning is especially relevant as the Welsh government want to 'ensure public bodies and those receiving public funding address pay disparities' (Welsh Government 2021f).

However, the new Programme for Government does not provide detail on how their commitments will differ from previous with respect to attracting a greater diversity of learners, actors and representatives in learning and the proposed bodies. A redistributive, equitable approach using the principles, practices and model for intersectional equality mainstreaming is needed (Parken 2010; 2018; Parken et al. 2019). This is discussed in our concluding section on embedding equality and sustainability in policymaking in the long term.

WELFARE AND UNIVERSAL BASIC INCOME

It is anticipated that an automated future will not guarantee paid work, or enough paid work for everyone, nor wipe away existing labour market inequalities (WEF 2020; Brown 2019; ILO 2018). This has increased interest in policy solutions such as Universal Basic Income, alongside existing conversations about ameliorating the impact of UK Government austerity policies in welfare and public services provision, which, as we have observed, disproportionately impacted people of lower socio-economic status, women, disabled people and minority ethnic groups. These discussions have centred on whether the Welsh Government should seek the full devolution of welfare from the UK Government, or partial devolution of some of the administrative levers (as has been done in Scotland). A recent policy review concludes that the reasons for devolution of welfare and the desired outcomes have not yet been articulated, and that once outcomes have been agreed, options for devolving welfare or its administration can be modelled, and that there is still room to improve take-up of existing welfare benefits (Taylor-Collins and Bristow 2020).

The Bevan Foundation has argued that the mitigation efforts of the Welsh Government amount to a 'Welsh Welfare Service' (2020b). These include benefits and grants through local authority for housing, support with council tax, the Discretionary Assistance Fund, and uniform grants, Education Maintenance Allowance for 16–19-year-olds in education, and the Welsh Government Learning Grants for Further and Higher Education (Bevan Foundation, 2020a). The Bevan Foundation argues for making these a coherent set of Welsh welfare policies, with coherent eligibility criteria, prior to seeking further devolution (2020b).

In our research, we heard arguments for and against the introduction of a Universal Basic Income. In favour are coherence arguments, that it provides for greater autonomy and less top-down control regarding conditionality, provides a safety net for those who will not find work in the future or need to retrain, can assist women to escape from domestic violence, and enhance opportunities to explore creativity, change career direction or volunteer.

Against are arguments that it could undermine the universal welfare state – creating an individual contract between the state and the individual, likely based on some form of conditionality or credentialism (training/volunteering), and that it reinforces consumerism as

the main method for creating growth and tax revenues, in opposition to an environmental approach, and there are cost concerns:

> *I'm sceptical about UBI [Universal Basic Income]… it's a huge cost and no one has said where the money is coming from.* (Discussion Group Participant)

Lombardozzi (2020) raises concerns that given the dominance of neo-liberalism conditionality will be embedded, creating pressure on women to provide unpaid care and to have more children to address shrinking populations. Our research participants also pointed out how a 'one size fits all' policy may have different outcomes for equality groups:

> *Is problematic … could encompass a whole range of benefits and benefits for disabled people could diminish … lower amount … not enough to address extra costs of living as a disabled person … what is the system for people who can't work.* (Discussion Group Participant)

Additionally, we heard about improving the take-up, this time through better administration of existing welfare benefits:

> *There needs to be greater take-up of Direct Payments and not necessarily for care but for overcoming barriers to social interaction and the like … Social Services departments need to give up control, they're focused on maintaining investment in traditional services and there's a role for unions here and the procurement process … not fund unimaginative solutions.* (Discussion Group Participant)

Public Health Wales has reviewed the health-related evidence on Basic Income (Jones 2021), and the Future Generations Commissioner for Wales recommended a pilot is carried out in Wales. Piloting basic income forms part of Welsh Labour's new Programme for Government. We also agree with Brown (2019) that for Universal Basic Income to work, it should not contain elements of credentialism. It will be important that the trial design mainstreams equality into design and delivery – that is removing the barriers built into the current system which imputes household dependency.

A trial of an individual basic income without restrictive eligibility based on household income is to be welcomed, and it should begin to demonstrate the impact Basic Income has on the policy changes we have called for, which include: taking account of the additional costs of living as a disabled person, increased Educational Maintenance Allowance, paid leave for training or retraining grants, extension conditionality for Job Seekers Allowance and Universal Credit to include retraining, and free high-quality childcare from nine months for all parents.

Figure 2 summarises the current relation to work and inequalities, and provides policy options for change, considering their ability to take us closer to the vision first set out in the Wales We Want report (Cynnal Cymru 2015) and formalised in the Well-being of Future Generations

(Wales) Act 2015. It highlights policy responses that may have inadvertent consequences unless provision is designed to tackle inequalities, and what is needed to promote equality.

AREAS FOR ACTION

These areas for action have been informed by the evidence review and initial discussions with stakeholders. They will be tested and developed further with stakeholders in the next phase of this work:

1) **Increasing the number of women, ethnic minorities, and disabled people in the digital and 'green' economy, so that existing inequalities are not recreated as these sectors grow.**
2) **Supporting employers as they redesign jobs to take account of increased automation and digitisation of tasks, so that they protect and improve people's job quality, security, autonomy, and work-life balance, and involve employees in the process.**
3) **Targeting and improving the accessibility of business support, entrepreneurship programmes and retraining/skilling opportunities to make sure they are open to all. Ways of achieving this may include offering paid leave/incentives to retrain, free childcare and/or additional financial support for those in education or job seeking.**
4) **The creation of a future of work strategy, underpinned by equality and fair work principles, could integrate policy and action on the foundational economy, shifts to the digital strategy, green economy and enterprise.**

Figure 2: The future of work

CLIMATE CHANGE

In this section we consider the current Welsh Government policy strategies towards climate change. We consider too the public account of these strategies as a climate emergency and the transition to net zero is declared. There is a growing literature about how to engage people and organisations in the mitigation of climate change, and how to ensure that outcomes in the future are both just and equitable (Green and Gambhir, 2020). The questions here consider who is the most likely to be adversely affected, and how will they be affected, by existing climate change policies in Wales. In answering these questions, we largely focus on the

decarbonisation agenda, the steps that Wales has taken towards this and the review of that progress by the Climate Change Committee (CCC) (2020a).

CLIMATE CHANGE IN WALES

Climate change is one of the defining problems of our age, with implications for the health and stability of existing and future generations (White 2017). The changes to the global atmosphere described by the term 'climate change' are caused by human activities that release greenhouses gases, for example burning fossil fuels (Diaz et al. 2019).

Climate change is by its nature a global issue. Many solutions have been shaped internationally and the UK is one of many countries that has signed up to protocols and targets such as the Paris Agreement and the 2030 Agenda for Sustainable Development. In the context of these global trends, it is necessary to consider the local effects for communities across Wales.

In Wales, climate change has led to an increase in regional flooding, winds, drought and temperature fluctuations, with direct effects on transport, agriculture, housing, business, and social and cultural activities (Welsh Government 2020g). Climate change in Wales means summers are becoming warmer and drier, with winters becoming milder (fewer frost days) as well as wetter and windier, particularly in the eastern and southern areas. This will bring increased frequency of drought, particularly in the south. Climate changes particularly impact on growing conditions but also increase the risk of fire and water shortages (Seidl et al. 2017). Water, like land, is a crucial ecosystem resource for humans and its scarcity or degradation can lead to significant societal conflict.

We are already seeing an increase in the frequency of high-intensity rainfall in the winter leading to occurrences of flooding, landslips and sedimentation of water courses. Sea levels are also predicted to rise across the country. According to Climate Central, large parts of Cardiff, Newport, Swansea, Prestatyn and Llandudno will be underwater by 2100.[18] In Cardiff this is a predicted rise of 24cm and 22cm, with parts of the capital's least affluent and densely populated communities significantly more likely to be underwater.

Collected data also already indicates that economic output along with health outcomes will be negatively affected by increasing temperatures, along with significant consequences for the environment and society (Hansen and Sato 2016). Climate change will have direct effects on transport, agriculture and housing, as well as on business and other social, cultural and economic activities. The direct effects of climate change can also be understood through the impacts on resources that are used in Wales (also known as 'ecosystems services') such as water and food. Climate change will impact on other ecosystem services that provide security,

[18] Climate Central: https://coastal.climatecentral.org/map/7/-4.1599/52.4174/?theme=sea_level_rise&map_type=year&basemap=roadmap&contiguous=true&elevation_model=best_available&forecast_year=2100&pathway=rcp45&percentile=p50&refresh=true&return_level=return_level_1&slr_model=kopp_2014

and the cultural, physical and mental health of communities will be impacted by flooding or landslides for example. In Wales, a small positive effect of climate change may be experienced through the increase in temperatures. However, the combination of environmental, economic and social effects outweighs any possible benefits. Climate change will ultimately affect how we will live, work and recreate, but like many other social and environmental processes, the consequences of climate change are unstable, unpredictable and irreversible (Welsh Government 2019d).

In Wales, public concern and awareness about climate change is increasing, and important work is being done about how to understand how climate change may look and feel for coastal communities like Fairbourne (Buser 2020). Yet, given the uncertainties of climate change, more needs to be done to understand its ongoing social and other impacts. The expectation is that climate change patterns will intensify, along with other human-led processes, which together are leading to the destruction of biodiversity and freshwater systems (Diaz et al. 2019). The consequence is that almost every human activity (economic, environmental, social and cultural) within the current geological epoch (known as the Anthropocene) has the potential to put the living systems of the planet, and our primary resources of water, air and land in Wales, under severe stress (Klein et al. 2017). The reported risks in Wales include changes to soil conditions, changes in animal species (reductions in native species and increases in invasive species), greater risks of pests and diseases affecting our forests, agriculture and human health (Natural Resources Wales 2020). Climate change, while largely considered in isolation in this report, is recognised as deeply intertwined with these processes of biodiversity and freshwater decline meaning that as climate change accelerates there is a risk of ecological collapse. The Welsh Government's declaration of a climate emergency is a recognition that if these processes continue, once an irreversible tipping point is crossed, current conditions and ecosystems would be unable to recover.

With growing awareness about how climate change shapes and transforms societies, emphasis has been placed on the potential for climate change to exacerbate existing inequalities and for solutions to climate change to create new inequalities (Islam and Winkel 2017).

The relationship between climate change and inequality can be explained in the following way: the poorest and most marginalised populations who are least responsible for the production of greenhouse gases are

a) the most likely to be exposed to its negative effects,
b) more susceptible to damage, and
c) have the least resources to respond, cope and recover (Markkanen and Anger-Kraavi 2019).

There is concern that climate change will worsen within countries due to internal social inequality, as well as creating a growing economic inequality between countries as the costs of addressing climate change are realised. The COVID-19 pandemic has already shown how a crisis can have worse impacts for vulnerable groups (Conceicao 2021).

Acknowledgement of the inequalities caused by climate change is increasing (Welsh Government 2020g). As mentioned in each of our sections, it is not in the scope of this review to identify all those inequalities, but rather to generate a discussion about:

i. What we have learned about possible future inequalities for climate change in Wales, based on the response to COVID-19. Notably for many academics the causes of climate change and the pandemic follow the same processes (i.e. global travel, deforestation, rising earth temperatures). An analysis of COVID-19 effects is useful if we understand it as part of the same climate-related global increase in occurrence of infectious diseases (like SARS, MERS H2N1).
ii. The possible inequalities caused by the solutions to climate change. In Wales, this focuses our attention on the local efforts to mitigate climate change. Our work is based on a critical review of climate change policies, and their effects, through the concept of a just transition. This is an approach that argues that the mitigation out of climate change must also be 'a transition out of the logic of unequal relations – rather than just out of fossil fuels' (Velicu and Barca 2020, p.263).

THE DEBATES

> The emphasis on solutions blinds us to the fact that climate change … has already altered our way of being in the world [it has already] created new landscapes of inequality (Beck 2016).

As mentioned, a number of key points about climate-related inequalities shape our understanding in this report. The poorest and marginalised populations who are least responsible for the production of greenhouse gases, are both more vulnerable to its effects, and have the fewest resources to be able to respond to or prepare for crisis (Markkanen and Anger-Kraavi 2019). The inequalities generated by climate change – and the responses to it – make sense at a global scale. It is clear to see how higher levels of consumption in the richer countries are driving fossil fuel production in the less affluent places. This is despite reductions in fossil fuel use in the UK since the 1960s (Macrotrends 2021; Welsh Government 2018).

There have been two clear approaches for addressing climate-related inequalities. Firstly, attention has focused on identifying the negative outcomes associated with climate change that exacerbate inequalities, and the barriers this then presents to the achievement of economic growth and/or the reduction of poverty (Diffenbaugh and Burke 2019). Efforts to address social inequalities have either focused on the promotion of economic growth to reduce poverty and improve the lives of the most impoverished (Diffenbaugh and Burke 2019), or they have sought to limit economic development to reduce its climate change impacts, while at the same time finding ways to reduce inequality (Conceicao 2021). Preferably, climate change policy should focus on the latter, reducing the overall impact of human consumption and

production while seeking to protect vulnerable people and ensuring they benefit the most from climate change policies (Heffron and McCauley 2018).

When equality is discussed in the context of climate change, it refers to the need to redistribute the unequal costs of climate change. Climate change policies in this context are known for their efforts towards reducing the negative or adverse side effects, or they are aimed at producing co-benefits, like decarbonisation of homes and house improvements (Markkanen and Anger-Kraavi 2019). In other words, the focus is on facilitating the 'assets' or capacities that a community has to respond to climate change, and rebalancing the differentiated access to instutitional resources that might otherwise prevent a community from achieving a positive outcome (Tschakert et al. 2013). This is an approach largely supported by research from the ecological and natural sciences.

Yet efforts to identify the assets or adaptive capacities of a community (resilience) may direct attention away from understanding how and why resources and capacities are unevenly distributed, or what would make a community or group more vulnerable to the effects of a significant event like a flood (Handmer et al. 1999). Understanding the structural drivers of vulnerability is needed to understand the complex relationships between inequality and climate change (Schor 2015). It may be possible then to ask why communities at risk from flooding are also those less likely to have financial protections (insurance or savings), own their own home or suffer the greatest stress and disruption if their homes are flooded (Tschakert et al. 2013).

Secondly, inequality outcomes of climate change mitigation policies have been recognised, but so far received little attention. Addressing climate change will be disruptive and potentially costly for most social groups, and efforts are often focused on encouraging people to participate. However, as vulnerable groups are least likely to be part of decision making and planning, outcomes are unlikely to meet their needs or represent their interests. While climate change mitigation policies have the potential to reduce inequalities and produce co-benefits, their poor implementation can result in negative health outcomes or fail to realise their impacts (Markkanen and Anger-Kraavi 2019). There is a need to build an understanding of the new inequalities that climate change policies can create, and the experience of these policies by the most vulnerable (Green and Gambhir 2020). Active travel policies encourage cycling, for example, and they may be based on efforts to include women and ethnic minority groups. Assumptions about the type of journeys taken and the effects of policy for inclusion may miss the fact that, relative to men, most of the journeys taken by women are local and multiple. While males may cycle greater distances and appear to be a good model for the delivery of active travel plans, they have also been found to be multi-transport users who use the car the most and overall are the least sustainable (Shaw et al. 2020). Similarly, efforts to engage marginalised communities at the periphery of a Welsh National Park in green spaces may overlook the transport and other economic inequalities that represent the greatest barriers to inclusion, or overlook the ways in which these communities already use the park, but which are not represented in visitor surveys (MacBride-Stewart and Headington 2021).

Notably, the risk of adverse social outcomes associated with climate mitigation policies will accelerate as more strategies are implemented and existing ones are scaled up (Markkanen and Anger-Kraavi 2019). For example, climate change mitigation policies can increase economic inequalities if the cost of fuel, food or house rentals rises, or if the economic and social benefits are not distributed evenly. That is, if the policy fails to provide decent work or contribute to positive social relationships through volunteering or community stewardship.

Identifying inequalities related to climate change in the Welsh context may be challenging because these may be indistinguishable from the inequalities that already exist locally, or from efforts that already exist to reduce inequalities. In addition, we may have limited locally specific data about climate change effects, such as the effects on soil or temeprature increases. While it is not always possible to distinguish local effects in the Welsh policy context, inequality is undesirable because it has a range of social, economic, cultural and negative effects, which can worsen the rate of environmental decline.

For Wales, the uncertainty is exacerbated by several processes that make independent and autonomous decision-making challenging. Climate change extends across national borders while having the potential to disrupt many of the social processes, public services and economic activities, on which our aims for healthy society in Wales depend (Baker 2015). We are also dependant on the capacity of technological, scientific, policy and societal resources to help us manage this human-caused disturbance. Similarly, the lack of understanding about the future for climate change itself is resulting in even more unpredictable or unsuccessful solutions (Richardson et al. 2011).

However, the focus on positive policymaking in Wales is encouraging. At the time of writing there is a new Ministry for Climate Change in Wales, highlighting its importance to the Welsh Government's agenda (Welsh Government 2021g). Existing frameworks for well-being and environmental protection build on our recent history of leadership in national legislation that linked the creation of the National Parks and Access to the Countryside Act 1949 and the National Health Service Act 1946 to address the post-war crisis in health and well-being.

THE POLICIES – DECARBONISATION AND NET ZERO

As emissions of carbon dioxide and other greenhouse gases into the atmosphere are primary drivers of climate change, the climate change ambition for Wales proceeded towards reducing levels of emissions in line with a commitment to 'net zero' by 2050. This target was agreed by the whole of the UK in response to the Paris Agreement. Net zero refers to the balancing of greenhouse gas emissions, where the amount of greenhouse gas emissions put into the atmosphere is matched to the amount taken out (CCC 2020a). Net zero was approved for Wales by Senedd Cymru in March 2021. Prior to the declaration of a climate emergency by the Welsh Government in April 2019, effort was focused on reduction towards 'low carbon' targets and on reducing the levels of greenhouse gases or 'decarbonisation' (Welsh Government 2020g).

To achieve net zero, the Environment (Wales) Act 2016 has been used to set a legal target of reducing emissions by a minimum of 80% by 2050.[19] In March 2021 the 2050 target was reset at net zero. The process of achieving this is through a system of five yearly carbon budgets, and targets. The first carbon budget is for the period 2016–2020 with subsequent budgets until 2050, and interim emission targets set for 2020, 2030 and 2040. The first target is a 27% reduction by 2020. Subsequent emissions targets approved by the Senedd Cymru are 63% by 2030, 89% by 2040 and at least 100% by 2050. This is an update on the original targets (which were 45% by 2030, 67% by 2050 and 80% by 2050). Notably each subsequent target will be harder to achieve but the carbon budgets and stepping-stones ensure that regular progress is made towards this long-term target.

The Welsh Government's efforts for net zero by 2050 focus on reducing emissions in the key areas of: transport; buildings/housing; electricity generation/fuel supply; agriculture/land use/forestry; aviation and shipping; waste; greenhouse gases; and through behaviour change (CCC 2020b). These are the sources considered to produce the most outputs. Reductions in emissions for each of these sources is directly related to new ONS measures of societal well-being, which include assessments about where we live (i.e. access to the natural environment and satisfaction), our finances and the state of the natural environment (ONS 2019c). The future of climate change mitigation policy requires us to take account of its combined effects on societal and human well-being, and the natural environment.

The Climate Change Committee is the independent statutory body that advises the Welsh Government on emissions targets, and it holds this responsibility for Wales and the other devolved governments. The 2020 Report on 'Reducing Emissions in Wales' (CCC 2020a) noted that 'emissions have fallen by 31% since 1990. In the first two years of the Wales First Carbon Budget period, emissions fell by 20%, almost entirely due to reductions in the power sector'. That is, due to the closure of Aberthaw and the phasing out of coal mining. The Climate Change Committee (2020) report notes that the fall in emissions has not been even across all the sectors – with only small falls in waste, shipping and buildings.

The pattern of emissions for Wales is different from other countries in the UK with the energy supply sector remaining the largest emitting sector in Wales (29%) followed by the business (22%) and agricultural sectors (14%) (Welsh Government, 2018). However, the Climate Change Committee (2020) also reports that 'underlying indicators and the lack of a cohesive, economy wide strategy for 2050 – at both UK and Welsh Government level – mean that Wales is not currently on track for the 80% target, let alone Net Zero'. The report authors note that the policy-scape for reducing emissions in Wales has focused on a number of policies:

- A low carbon delivery plan for the First Carbon Budget

[19] Wales' policy approach is an integrated one. A tripartite of legislation in Wales is used to address wellbeing: Well-being of Future Generations (Wales) Act 2015, Planning (Wales) Act 2015 and the Environment (Wales) Act 2016.

- A draft Transport Strategy that includes a clear focus on the provision of accessible active travel and public transport while supporting the transition to electric vehicles
- Achieving the UK's highest recycling rate, with food waste collection in all parts of Wales, and setting very ambitious long-term targets to further reduce waste and increase recycling
- Support for large low carbon electricity generation projects in Wales
- The inclusion of 'green recovery' principles in the Welsh Government's response to the pandemic

Separately, the Welsh Government is developing four regional energy strategies, including an energy vision, energy modelling and an economic assessment identifying regionally relevant opportunities. The Climate Change Committee (2020) report goes on to state that their overall approach is to provide support to private companies and individuals to achieve net zero through: investment and low carbon choices in how they travel, how they heat their homes, what they buy and what they eat. The Welsh Government has translated their approach as: aware, prepare and adapt.

However, policy and academic discussions of low carbon transitions have shortcomings (Sovacool et al. 2018). From the perspective of inequality, low carbon transitions are often gender or demographically neutral, presuming that an approach will work across all groups. They are often used to reproduce the status quo (i.e. car ownership), and alternatives can be marginalised (i.e. club car models) (Bergman et al. 2017).

The next sections summarise the main findings from the Climate Change Committee report on 'Reducing Emissions in Wales' focusing specifically on an analysis of future inequalities. Efforts here are concentrated on what Arranz has said is the need for a better focus on the inequality elements of current and potentially future policy by analysing the social elements of these policy actions (Arranz 2017). Notably there is a lot of uncertainty about what the future means for communities who are less able to adapt because they have fewer resources to do so.

The decarbonisation priorities identified by the Welsh Government post-pandemic are housing, transport and the 'resilience and adaptation of communities to climate change' (2021f). The following section reviews the predictions for climate change inequalities and then addresses these in relation to the areas for decarbonisation set out in the Climate Change Committee report (2020b).

THE PREDICTIONS

Current debates about climate change and particularly the pathways to decarbonisation tend to have negative impacts and injustices globally, which exacerbate vulnerability and inequality (Sovacool et al. 2018).

The first prediction of climate change inequalities emanating from work on futures trends suggests that climate change will lead to profound changes and disruptions to society as we know it (Klein et al. 2017). Their work suggests that we face a society in which there is increasing fragmentation between groups, and increased experiences of scarcity and displacement. They propose that addressing climate change will produce an erosion of governance and trust, partly because existing policy cycles will not work (they will be too slow or not forward-looking enough), or because the urgency of climate change will be replaced or displaced by other concerns. This is supported by a large body of work on gender and equality – which shows that emphasis on the adaptability, resilience and capacity of society to respond to climate change masks interconnected and deep-seated structural inequalities that ultimately will emerge in the implementation of climate mitigation policies.

The second prediction is that a shift to a low carbon, Net Zero economy overlays the assumption that the economy is still expected to grow, and that this growth severely impacts our ability to address climate change. Production and consumption practices are driving climate change, biodiversity loss and land use change (Brooks and Bryant 2013). The current model of economic growth has reinforced the inequalities between groups and societies that are more consuming and those who are less consuming. Despite the global economy growing, with fewer people living in extreme poverty, almost half the world's population – 3.4 billion – struggle to meet basic needs (World Bank 2018).

In a scenario where economic growth continues, it has been shown that not only have many places become more unequal (Wilkinson and Pickett 2009) but that life satisfaction does not increase, and the affluent become less prosocial (Piff and Robinson 2017). Deitz et al. (2012) note a concerning assumption globally about the predictions of an environmental Kuznets curve in which the environment is seen to improve as countries get richer. Instead, both consumption and environmental impacts continue to grow as countries become richer. The argument reinforces the need to think about relative consumption practices, and for improved thinking that connects inequalities, the climate crisis and sustainable development. This is the kind of thinking that has been prompted by the Just Transitions Commission in Scotland, endorsed as a way forward by the Climate Change Committee in its latest report on Wales (2020).

The final aspect is that we need to understand the role of co-benefits of climate change mitigation policies and how these impact on historical access inequalities (i.e. that are related to the apparent co-benefits of a policy approach). There are two clear assumptions: that access to the benefits of active travel and a low carbon society will become more equitable, primarily through better health and reduced health inequalities, or that significant but potentially hidden inequalities will persist. For example, the reasons for participating in active travel will be driven by opportunity for some, confidence on the road, perception of safety or good infrastructure for others, as well as physical ability and travel reasons (Shaw et al. 2020). Poverty for others will prevent the use of high-cost fuels, with possible implications for work and residential location, and it may contribute to a reduced sense of safety and to poor infrastructure and transport systems (Jarrett et al. 2012).

Considering these future predictions, the current global picture about climate change has been represented in some policy circles as one of optimism (Page 2007). We have not yet reached

the 1.5 C threshold. If there is an effective response to the declaration of a climate emergency – meaning an immediate halt, reduction and transformation in the use of fossil fuels – supported by good governance and a principled approach, the argument is that we could reach a shared vision for balancing the social, environmental, economic and cultural needs that does not compromise future generations.

Furthermore, there is a considerable support in policy circles that vulnerable people must be protected from the costs of the transition and benefits should be shared broadly (Heffron and McCauley 2018). This may involve systematically screening climate change policies for their impact on vulnerable and excluded groups but also ensuring that those people most vulnerable to climate change are part of the decision-making process. A series of publications suggests that a just transition must be based on the engagement and participation of all sectors of society (Evans and Phelan 2016); drawn from local knowledge and skills (Evans and Phelan 2016); include both climate ($C0_2$) and environmental concerns (Heffron and McCauley 2018); and include a recognition of diverse values and rights (Ciplet and Harrison 2019).

This intent has already shaped Wales' legislative processes. In Wales, public concern and awareness about climate change is also increasing (Welsh Government 2020g). In the 12 months before COVID-19, areas in Wales suffered several catastrophic floods. Yet the levels of awareness about climate change differ across Wales, with educational level and middle age (45–74) as the most important indicators of a disparity between the most and least concerned. This aligns with data collected on the public responses to climate change (Welsh Government 2020g). There is also a willingness to get involved in climate actions. Actions taken towards climate change by individuals were most common if they were government- or policy-led change (i.e. recycling, energy use, efficient appliances and local food) compared with those that involved taking individual actions (i.e. volunteering, being a member of a group). Similarly, a small Cardiff University student-led project on community engagement in Cathays found that while residents want to be involved in local climate actions (from neighbourhood greening to biodiversity conservation) a younger student-age population is more likely to want to be involved in global actions through large organisations (Worldwide Fund for Nature (WWF), Greenpeace, etc.) (Villis and MacBride-Stewart 2020).

While COVID-19 has been considered to have long-lasting implications for tackling climate change because it led to actions that directly or indirectly changed the way that people, for example, travelled, worked, shopped, during the pandemic, it produced some evidence of a fall in the global levels of carbon dioxide emissions in response to these changes. Research conducted during the first lockdown encouraged a sense of optimism that the reduction in carbon dioxide emissions might be sustained and contribute to Net Zero goals (British Academy 2021a). However, research by ONS (2021b) suggests that this sense of public optimism and personal action may be short-lived.

Any approach must build public trust in the solutions and their capacity to address the future for climate change. This includes whether climate change solutions are focused on public

visibility and contribution (also known as downstream approaches) or focused on the businesses and industries involved in processes that produce carbon (upstream). The latter may involve carbon taxed at the point of production, addressing the sources of emissions from industry, waste and agriculture, and ensuring these industries return of carbon is equivalent to that extracted, whereas the former may involve applying a carbon tax on goods and services at the point of purchase. As previously mentioned, it is our belief that addressing future inequalities requires structural interventions. Gaining trust from the public may involve the use of regulation to stop high carbon practices (which involves clear communication about what type of changes are needed and when changes will happen, and clear evidence of progress) and have supportive policies in place to enable low carbon solutions. It must also take account of the economic vulnerabilities that shape many of the inequalities created by climate change and climate change mitigation policies.

INEQUALITIES TO BE ADDRESSED DUE TO CLIMATE CHANGE

> *Extreme weather events and flooding – people in valleys will get poorer access to insurance and coastal areas will be lost. Pontypridd will be the main city once Cardiff is lost. More affluent people could think about moving, also presence of major industries on coast. Ecosystem services, e.g. clean water, clean air. Access to these services for those who cannot afford them, will be left out.* (Discussion Group Participant)

Various scenarios about the possible future for climate change are important to consider in relation to inequalities. This section looks at inequalities within climate change policies in Wales, specifically decarbonisation. The recognition of inequality is starting to emerge at the heart of policies. This is in part due to the recognition by bodies such as the Climate Change Committee that:

> Over 40% of the abatement in our scenarios to 2035 involves some from consumers as they adopt new low-carbon technologies [and that] over 15% of the abatement requires consumer choices – both to reduce demand and improve efficiency. (CCC 2020b)

As significant gaps for understanding impacts on protected characteristics groups remain, this section reports globally on the predictions. The following section addresses the main areas outlined in the Climate Change Committee (2020) report which reviewed the progress of the Welsh Government towards net zero, outlining its achievements and priorities in each of the following decarbonisation areas: 1) transport mechanisms; 2) buildings/housing; 3) electricity generation/fuel supply; 4) agriculture/land use/forestry; 5) aviation and shipping; 6) waste; 7. greenhouse gases; and 8) behaviour change. The Climate Change Committee (2020) report also includes a ninth area: manufacturing and construction, but we have largely addressed this with the 'green economy jobs' in the previous section on the future of work. Greater weight is given

to these areas in the Welsh Government's Programme for Government (2021d), with particular emphasis on housing and transport and bolstering community resilience to climate change.

TRANSPORT MECHANISMS

There are now a suite of policies in Wales to support the transition to net zero that consider the critical role played by transport. These include initiatives and measures supporting active travel (Active Travel (Wales) Act 2013), the phasing out of new diesel cars and vans, and focusing on emissions for Heavy Goods Vehicles, rail and buses (Public Transport (Wales) Bill 2019), and a Wales Transport Strategy, including a Road Transport Fuel Obligation and a Cycling and Walking Investment Strategy and railway network improvement.

Emissions from transport are about mobility – for work, service provision and business supply chains. In Wales, per person surface transport emissions are higher than the UK average. Wales' emissions rate may be due to the different distribution of households, work and education and/or the need to travel by car to do work. In 2015, the ONS reported that households in the UK spent the most of their weekly budget on transport. While rural areas tend to be highly dependent on cars for transport, the picture is replicated in South Wales with many households dependant on being able to travel to work across the region.

There is potential to increase or decrease inequality in transport as we move to net zero. In the 1990s and early 2000s, transport disadvantage was noted as creating social exclusion from work, education and health services (Lucas, 2012). The report concluded that transport disadvantages and social disadvantage interact directly and indirectly to cause transport poverty. For example, this is relevant in the promotion of electric vehicles, which may have lower running costs but currently are more costly to buy. A lack of attention to poverty may be because these groups (and women, ethnic minorities and disabled people) are not included in planning and decision-making processes about electric vehicles.

It is the most socially disadvantaged, and people from rural communities, who experience the greatest transport disadvantage, have higher emissions and are more likely to need to travel by car to work (Curl et al. 2018). The 2006 UK NTS identifies that, whilst on average car ownership levels rest at around 85%, less than 50% of the lowest income quintile households own a car. Although 40% of individuals in the lowest income households report travelling by car at least once a week, they make only around one-tenth the car trips of members of one car households and they make far fewer trips in a week overall, using any mode of transport. (Lucas, 2012).

Markkanen and Anger-Kraavi (2019) call for a better understanding of the complex relationships between poverty, transport choice and travel needs. This means understanding how different social groups in Wales use transport and travel, and how they are affected by transport polices (Arsenio et al. 2016; Ryan et al. 2019). As transport unavailability is a factor in social exclusion, there is considerable need to reduce the price of alternatives or to consider alternatives that can facilitate also increasing social contact (i.e. through virtual, proximal or

local (planning) initiatives). Similarly, trends towards homeworking (to reduce transport emissions) need to consider the potential too for contributing to social isolation. We have made other comments about this point in a previous section.

BUILDINGS/HOUSING

Wales has a stock of housing that is carbon inefficient and is also likely to contribute to the exacerbation of respiratory and other diseases (Watson et al. 2019). The case for investing in housing as part of a net zero strategy suggests that there are co-benefits for improving the health and well-being of the Welsh population. The recommendations that exist as part of the net zero approach for Wales include a focus on:

i) Heat and buildings – green, zero carbon;
ii) Energy efficient buildings (new and existing);
iii) Focus on alternative fuel and heating mechanisms (i.e. heat pumps, hydrogen development and the gas phase out);
iv) Information on housing energy performance – Green Building passports/digital logbooks;
v) Addressing governance gaps (i.e. pathfinder areas; heat delivery body; zoning; pilots).

This includes specific policies noted in the CCC (2020b) report such as the Renewable Heat Incentive, Clean Heat Grant Scheme (UK); Warm Homes Programme; new-build standards; Energy Performance Certificate (EPC) ratings (homes/business); and the Heat Networks Innovation Programme (CCC 2020b). There is some concern that these costs and savings may not be distributed evenly between households leading to future inequalities in cost and thermal efficiency of housing.

Net zero recommendations for Wales include a focus on improving and promoting 'green' efficient buildings, fuels and heating across public bodies. Some key measures are untested such as the cost of alternative (low carbon) energy sources and the impact of a wide range of ownership models. There remains considerable uncertainty about future temperatures and cold weather events in relation to which solutions are most needed to future-proof homes and other buildings (CCC 2020b).

Included in the Welsh approach are specific measures for fuel poor homes. This aligns with priority areas identified by Public Health Wales to eliminate cold, damp and mouldy homes, and improve their ventilation and energy efficiency. We know from the Welsh Housing Condition Survey (2017–2018) that the private rented sector generally has the oldest housing stock and a higher proportion of poor quality housing (e.g. containing damp or other hazards). The authors of 'Making a Difference. Housing and Health: A Case for Investment' (Watson et al. 2019) report that 18% of homes in Wales represent an unacceptable risk to health. They account for 10% of excess winter deaths in Wales, increase respiratory problems by 30–50% and can increase the risk of poor physical and mental health, cancers and circulatory disease, and falls and serious

injury. Those groups who are more likely to live in poorly heated housing are children and families, young people and older people. These outcomes in the report are attributed to fuel poverty, which is exacerbating the link between adverse life experiences and homelessness, poor mental health and quality of life, and higher death rates. However, energy efficiency for housing needs to be combined with actions to avoid overheating.[20]

Women, minority ethnic and disabled people are more likely to experience housing difficulties, claim housing benefit or rent property, the UK Women's Budget Group (2018) reporting on the impact of changes in housing policy in the UK since 2010, noted that that women's housing situation differs from that of men. 60% of adults in households claiming housing benefit are women, and a further 55% of adults in social renting are women (WBG 2018). Furthermore, one-quarter (25%) of women who have experienced housing difficulties in the past stayed in emergency or temporary accommodation, compared with 17% of men (ONS 2018). Similarly, half of the BAME population in Wales live in rented properties, compared to just under a third of the white population.

Many of the changes in government policy that affect government spending on housing and housing benefit or changes to housing sector that support house ownership or 'the flow of benefits [tax, rental income, etc.] that homeowners get from their homes' (Watson et al. 2019,) affect women and ethnic minority communities. Costs and savings may be unevenly distributed between households. The overall evidence is that, in general, women, LGBTQ+, ethnic minority communities and those with disabilities tend to be disadvantaged, although the majority of people who are homelessness or rough sleeping are men. This evidence supports the view that it will be these groups most disadvantaged by a net zero housing system. This is because it is not just poor housing that has detrimental effects on these groups, but rather that their greater likelihood of being in poor housing is a reflection of deeper structural inequalities in the economic and social system.

Researchers and policymakers have called for more equality-based analyses of housing systems and housing policy, and for net zero housing policy to be sensitive to existing inequalities. However, there is evidence that even though strategies like improved insulation can bring benefits of improved living conditions and lower energy use, poor understanding of inequality means that these suggested co-benefits can further increase inequalities. For example, net zero policies will involve high upfront costs, cause significant disruption and add costs to energy bills until at least 2030 for existing housing stock, adding to financial burdens on those experiencing fuel poverty (CCC 2020b). Some key measures are untested and include considerable uncertainty: the costs of alternatives for new building/housing and for a currently diverse housing stock with a wide range of ownership models are unknown. There is also further uncertainty about the intensity of cold weather events and future temperatures.

[20] https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Briefing-Housing.pdf

ELECTRICITY GENERATION/FUEL SUPPLY

In the Climate Change Committee (2020) report, it is noted that Wales is a net exporter of gas-fired electricity to the rest of the UK network. At the same time, decarbonisation of electricity generation will have a significant impact on the poorest communities who have less access to improvements in energy efficiency and affordability resulting from fuel supply changes. This is due to existing structural inequalities. Nearly a quarter (24%) of the most vulnerable households in Wales already live in fuel poverty, meaning they do not have enough money to keep their homes adequately warm. People who are poor, or from minority groups, are also more likely to live in air polluted areas (Mitchell and Dorling 2003). To reduce exposure to traffic fumes and noise in these areas, people are less likely to spend time outdoors. This means they end up using, and paying for, even more energy (Roberts 2008; Welsh Government 2018).

Beyond the decarbonisation of homes, the Welsh Government's ambition is to reduce energy bills and harmful emissions, as well as address fuel poverty. The recommendations to address fuel poverty incorporate the government's wider ambition to reduce energy bills and harmful emissions. While housing has been addressed in a previous section, this also means addressing the decarbonisation of the electricity supply (that supports housing as well as businesses). The ambition is to deliver renewables (90% by 2050), deliver low carbon, phase out gas/coal, build flexible electricity systems (hydrogen, nuclear, carbon capture) and look at alternatives such as bioenergy supply and use.

Mitigating the effects of energy changes and protecting against energy poverty or soaring costs and uncertainty in supply, while also achieving a smooth transition to low carbon and alternative fuel systems, will require close attention to inequity. There is a need to ensure that the economic costs and benefits of new energy sources are shared fairly and do not unevenly affect the most vulnerable (Setyowati 2021). Including these vulnerable groups within decision making and planning will further help to ensure that existing disparities are not transposed from the 'old' fuel economy to the 'new' (Perrons 2005). Setyowati (2021) concludes that prioritising price affordability can be seen to undermine business ambitions, and that the inclusion of procedural justice issues (public discussion and participation) must be part of the equitable redistribution of electricity generation and fuel supply.

While, in policy terms, Wales has embraced a vision of reducing energy poverty, there are several challenges and uncertainties into the future. Carbon pricing will increase and renewables/ low carbon energy may not be accepted and can be controversial e.g. the impacts of offshore wind and nuclear plants on marine ecosystems. Moreover, realising Wales' ambitions means understanding the level of public trust in various mechanisms used to phase out coal (whether market forces, air quality or climate policy), and implementing new understandings or values related to fuel switching and flexibility (Nguyễn Thành 2013).

There are also complicated interrelationships between dimensions of poverty. Recent research from Cardiff University has concluded that air pollution can affect energy demand and supply

(He et al. 2021). As communities living in areas of high air pollution tend to protect themselves from outdoor air pollution (as well as noise and smell) by reducing their outdoor activities, they often also end up consuming more electricity (Roberts 2008). The authors provide evidence of this example of air pollution as people who are poor or from minority groups are more likely to live in air polluted areas as an example of the often double burdens on poorer communities, and the potential for missing some of these effects if decision makers focus only on a single dimension of decarbonisation. They propose that decision makers should think of ways to prevent inequality from widening the health risks and economic burdens that the most vulnerable are facing. In line with this thinking are efforts that link energy justice issues with efforts towards renewable energy and decarbonisation (Setyowati 2021).

AGRICULTURE/LAND USE/FORESTRY

The Climate Change Committee (2020) recognises the value in reducing emissions from agriculture in Wales while also focusing efforts to 'keep carbon in the ground' by growing forestry, protecting peatlands and pasture, and changing how land is used (International Union for Conservation of Nature 2019).[21] These solutions are said to reduce pollution and improve energy efficiency, biodiversity and well-being (Kabisch et al. 2016). However, the impacts on inequality in terms of how land is used and whether those with most to gain from the benefits of changing land use are those with the most social and economic need are largely uncertain (Dasgupta 2021).

In the Climate Change Committee (2020) report, Wales is reported to have a significantly higher proportion of total emissions from agriculture (16%) compared to the UK (10%). The report also notes that emissions from agricultural production have decreased 16% compared to 1990 due to policies that both reduced livestock numbers and regulated pollutants. There is believed to be considerable value to Wales for seeking efforts to reduce emissions from agriculture (CCC 2020b). Existing recommendations include: regulations for emission reduction; land-based measures such as restoration/renewal/re-planting – focusing on efforts to keep carbon in the land; converting non-forests to forests; restoring Wales' 90,000 hectares of peatlands, planting trees or allowing forests to regenerate and converting cropland to permanent pasture (IUCN 2019); as well as other efforts for low carbon farming (e.g. mixing trees with crops (agroforestry) or forage with livestock (silvopasture)); and a set of new agricultural and land use incentives or economy. These latter efforts include the contribution of various policies noted in the CCC (2020b) report such as: UK Agriculture Act (2020) various fuel programmes e.g. bioenergy schemes; Farming Connect, Farm Business Grant, Zero Waste Strategy, Sustainable Production Grant; and a 'National Forest for Wales' tree-planting strategy aimed at supporting decarbonisation as well as local communities (Welsh Government 2021h). [22] While Ministers in Wales expect to introduce a (Wales) Agriculture Bill, this has not yet happened. So

[21] In the Climate Change Committee (2020) report, Wales is reported to have a significantly higher proportion of total emissions from agriculture (16%) compared to the UK (10%).
[22] Agriculture Act 2020 (legislation.gov.uk)

that Wales can meet its World Trade Organization obligations to agriculture, arrangements for Wales are temporarily covered by the UK Agriculture Act (2020).

Lands and forests are intimately connected with how people live, particularly in rural areas of Wales where agricultural and forestry are key in local economies. It is notable that agricultural land can be considered to be part of the solution for emissions, but that it can also be part of the problem. Planting trees and using sustainable land management practices can help retain and store significant amounts of carbon and reduce flooding. Wales has a wide geography so a range of mechanisms can be used. However, agricultural emissions are increasing globally. The projection for UK agricultural emissions is set to decline towards 2030, but many aspects are uncertain (Defra 2011). To some extent, uncertainties about further reductions in the agriculture sector are dependent on a reduced consumption of meat and dairy, a reduction in food waste, and technological innovation (CCC 2020b).

The comprehensive Dasgupta Review (2021) argues that technological innovations cannot be relied on entirely. We also need to change our production and consumption patterns. If we continue to consume at the level that we do, how we use the land and its resources, and the waste we produce may become an increasing – rather than a declining – source of our emissions. Dasgupta adds that:

> In recent decades, there has been a significant increase in our global demand for provisioning services, in particular food, timber, fibres, biofuel, and water. This has affected the ability of ecosystems to provide the regulating and maintenance services on which our economies ultimately depend.

In their report for the UK 2070 Commission, researchers explain how imbalances in economic activity and related social and environmental conditions across the UK creates 'left behind places' and communities (Tomaney et al. 2019). For example, the Welsh Food Poverty Network (2020) notes that not having enough money to reach affordable food shops or access a nutritionally balanced diet is now a common reality for many Welsh consumers. Ensuring that organic, low carbon food is available and locally grown could exacerbate inequalities, particularly if it is not affordable to some (CCC 2020b).

Contemporary demand for more sustainable patterns of food consumption pose potential challenges for inequality, particularly if it means encouraging the sourcing of 'local' or organically produced food that has a low carbon output. However, as stated in the Welsh Food Poverty Network report (2020), inequalities in food experiences, which include having enough money for food, being able to reach shops that sell food at an affordable price and having access to a nutritionally balanced diet (food poverty), are prevalent in Wales:

> A recent Food Standards Agency report found that a fifth of people in Wales are worried about running out of food and that 26% of 16–34-year-olds surveyed in Wales ran out of food in the past year … Comparing the estimated cost following the UK Government's

> ‘Eatwell Guide’ with household income shows that the bottom 20% of families in Wales would need to spend 36% of that income on food to meet PHE’s Eatwell Guide. Due to a complex mix of factors, people on low incomes have the lowest intakes of fruit and vegetables and are far more likely to suffer from diet-related diseases such as cancer, diabetes, obesity, and coronary heart disease.

Socio-economic issues should therefore be considered in light of the role that land and forests play in the lives of people in poverty. COVID-19 has also shown us the role that these green landscapes can play in contributing to a positive sense of well-being. Green spaces became low-cost places for recreation and connection. The Valleys Regional Park (VRP 2020) findings on the use of green space during lockdown found that 74% of respondents stated that open and green spaces had been more important during lockdown, followed by 25% who stated as important as before.

It is well documented too that when local environments are polluted or degraded there are significant negative impacts on people’s health and well-being (Lade et al. 2017). Poorer communities can struggle to access good quality green space near to where they live, often because it is more degraded, has poorer lighting, more litter and more antisocial behaviour. A lack of access to good quality green space, on top of being more likely to face work and housing insecurity, creates a cumulative negative burden on health (Cronin-de-Chavez et al. 2019).

Notably while the collection of data on poverty (or other social measures like gender or age) does not occur routinely in measures of green space access and use, more work is emerging about how the experiences of gender, poverty or ethnicity shape people’s experience of the natural environment in different ways (MacBride-Stewart et al. 2016). These include the existence of a skills/knowledge gap about low carbon options, along with a potential reliance of net zero approaches to focus on new technologies to help progress emissions reductions, which can exclude some members of society. In combination with the socio-economic, ethnic and cultural diversity of Wales, the scope and diversity of the land, forestry and agriculture landscape in Wales are also quite complex. This is due to the different types of landscapes, their multiple and intersecting uses and ownership types. Note as a reflection of this challenge, Wales had reduced its overall tree-planting target from 5000 to 4000 hectares. While tree planting was slow in 2019 (80 hectares) this is set to change in 2022. The complexity of land management and ownership adds to the challenge of understanding the inequality trends in this area.

In terms of engaging people who may be marginalised or in poverty, this emissions reduction strategy does involve a move to healthier diets and a reduction of food waste. The costs for individual households must be considered, although there is the often-overlooked consideration of social and cultural values that shape our relationships to food and nature. This approach has been largely reliant on farmers/landowners for woodland creation/habitat restoration. It is mostly rural communities affected by landscape changes like woodland creation. With a place-based approach in Wales, initiatives have largely been left to regional

and local strategic authorities, which can mean that changes can be very localised. Efforts to include communities across landscapes and local authorities' areas, rather than treating areas as particular sites, has been a relatively successful approach in Wales as shown with peatland restoration in Wales, Community Forestry initiatives and the Valleys Regional Network). Efforts to reinstate marginalised and/or equality communities across these landscape networks such as the role played by Communities First in Llais y Goedwig (Community Woodlands Network) may be a way forward.

AVIATION AND SHIPPING

This section briefly considers the role of efforts to reduce emissions from the aviation and shipping industry. This has several direct and indirect effects on future inequalities in Wales.

Research has shown that currently 'the lowest flight activity is among the least educated, and the highest among those with the highest level of education' (Gossling et al. 2020). This is confirmed by Banister (2018) who notes that 'Income has a very strong impact on flying, with 71 per cent of those living in households with an income less than £8,319 making no flights in the previous year, and 44 per cent of those living in households with income levels over £26,000 making two or more flights a year' (p.56). These academics confirm the need for far-reaching climate policies to curb emissions from the aviation industry (who make up 5% of global GDP). Research shows too that disabled people fly less due to cost barriers (Poria et al. 2010). Yet there is a lack of data to show how ethnic minorities, people with disabilities and people in the lowest socio-economic groups might be affected by future changes in cost, availability and desirability of flying.

Prior to the COVID-19 pandemic, international tourist arrival data and air passenger numbers worldwide were projected to still be increasing up to 2030. At this time, prospects for decarbonising the airline industry were under considerable discussion. An increased awareness of the climate implications of air travel has led to calls for people to fly less. So called 'flight shaming' has emerged because of this but it is an undesirable approach given that the necessity of air travel cannot be generalised across the whole population (Gossling et al. 2020). There is a clear trend ahead in differential access and use of air travel between socio-economic groups, where flying is predicted to become prohibitive to the bottom 80% of society, and those with higher incomes are less affected by the necessary changes ahead to this sector (Klein et al. 2017; Lopez et al. 2016).

Analysis of passenger air travel in the UK during 2020 suggests that emissions in that year were 41.5% lower than they would have been without COVID-19 (Fouquet and 0'Garra 2020). However, reductions in travel affected those in the lowest socio-economic groups three times as much as those in the highest. This is due to a number of reasons – travelling less overall and travelling less for work. This finding illuminates other work on future mobility inequality trends in the UK (Lucas et al. 2019), which suggest that reversing the trend for airport expansions could

affect rural communities, but that changes to air travel are most likely to negatively affect high income users. Forecasting work suggests that holidays, which include aspects like how we travel, will become more important but that flying will become prohibitive and a luxury extended to the most elite. This contrasts with the move to necessity for the bottom 80% of society. This also means that the possibility of paying carbon credits for flights may also become a brand that only some can afford (Klein et al. 2017).

It is important to note we have only accounted for travel related to leisure/holiday or work, but for many people in Wales, travel is an essential aspect of retaining connections with family members outside of the UK, or for international students travelling to Wales to study (British Academy 2021a). The Migration Observatory (2018) highlighted that people born outside the UK made up an estimated 6.3% of Wales's population in 2017. While this is lower than the UK average of 14.4%, like all places in the UK this represents a growth in foreign-born residents since 2001. Cardiff has the highest non-UK-born population in Wales (11.3%). The nature of climate change means that as places across the globe become uninhabitable (due to temperature increases or sea level rises) climate-related migration may have significant impacts on Wales in the future. Predictions of these flows are unclear, but coupled with potential for rising costs and limitations on air travel vulnerable individuals may find themselves less mobile and less likely to migrate, or to be able to retain contact with their place of origin (Foresight 2016).

The existing recommendations for reducing emissions in air and shipping does not include these social factors. Rather they include a number of technical and infrastructural changes to include emissions in carbon budgets, to develop the use of sustainable fuel sources and to stop airline expansion. While Wales has introduced the Climate Change (International Aviation and International Shipping) (Wales) Regulations 2018, it also purchased an airport in 2013. While the latter is not a large source of emissions in Wales, it is subject to emissions targets set out in the Environment (Wales) Act 2016.

World seaborne trade is expected to continue to grow by almost 4% between 2018 and 2023 (United Nations Conference on Trade and Development 2018). Notably, efforts to control emissions in the shipping sector need to acknowledge that consumption as well as production drives this industry. Brexit and COVID-19 have, for some consumer groups, raised the public profile of the debates that have existed largely amongst pro-environmentalists. These reflect the need to take account of the extent to which the goods (foods, building materials, clothes, etc.) that we consume have travelled large distances to reach us. One of the approaches used to communicate the impacts of consumption at the household level (and to allow for the exploration of personal mitigation options) has been through the use of footprint calculators (West et al. 2016). These enable a link to be made between local consumption and wider greenhouse gas emissions that relate directly to the goods and services that end users are familiar with. However, they do not take account of Wales-wide ecological impacts and the societal-level demands on resources.

Ecological footprinting may help us better understand the trends between income and consumption at the household level, including attention to which groups consume more or consume products with the highest carbon dioxide emissions. It echoes existing work on the growing inequality footprints between countries globally (Alsamawi et al. 2017). Lopez et al. (2016) suggest that even during a recession, the shopping basket of all income groups has very similar emissions, but that those with higher incomes consumed more. That is, they improved their domestic lifestyles by relying on imports from other countries that already have high emissions. They argue that to reduce carbon dioxide emissions at the household level means paying attention to the consumption patterns of different socio-economic groups, and the distribution between these different groups.

WASTE

The Welsh Government's Future Trends report (2017) noted that there had been good progress on waste reduction in Wales. Natural Resources Wales (2012) calculated that between 2012–2013 and 2016–2017, household reuse, recycling and composting rates increased in Wales, while the percentage of municipal waste sent to landfill decreased. There were also improvements in the amount of local authority municipal waste (up 11% to 63%). The Climate Change Committee (2020a) report identifies this as one of the highest rates globally. There are new ambitious targets ahead for 2025, where Wales aims to reduce emissions from waste to 92% by 2030 (compared to 1990 baseline measures). What is important about this achievement is that it represents the devolved powers that Wales has for these sectors.

There are different responses to climate change among different socio-economic groups and by gender and disability (Islam and Winkel 2017), but there is a research gap over whether this translates into recycling or waste reduction. There is some evidence that women and people who are affluent are more likely to undertake pro-environmental actions. However, Valenzuela-Levi (2019) shows that this is more a reflection of the distribution of resources – for example women are more likely to be involved in purchasing, processing and disposing of household goods. Resources that support recycling are more likely to be distributed in urban and affluent areas (influenced by budgets, resources and even assumptions about residents' pro-environmentalism). Pro-environmental actions thus have a structural component to them. Taking account of inequalities in waste reduction in the future therefore needs to understand the needs of the most vulnerable communities, for example with fewer high-end items that can be readily resold or recycled when household items need to be replaced.

This consideration of structural factors became evident during the pandemic. The British Academy (2021a) report showed the extent which lockdown resulted in positive changes in food waste behaviours:

> "UK consumers reporting greater awareness and willingness to minimise household food waste. This led to a reduction in food waste across bread, milk, potatoes, and chicken from 24.1% in November 2019 to 13.7% in April 2020. Following the end of the lockdown this rose to 17.5% in September, but remains 27% lower than 2019 figures."

These findings support the recommendations made by the Climate Change Committee (2020) for a continuation of waste reduction and a recycling strategy that would also encourage a landfill ban/export ban, and support efforts to produce energy from waste via a circular economy approach (Welsh Government 2010). The challenges include the ways in which consumption habits are increasing; Wales has achieved good recycling levels – but with new targets ahead, this could become more challenging.

Reducing emissions from waste represents only part of the problem that waste presents for future inequalities in climate change. There are numerous other social, economic and environmental impacts for marginalised communities. As Kalina (2020) notes, this includes the increased risk of exposure to waste and to contaminated sites, the higher probability of being employed in the waste industry, a greater burden of the costs of effective waste management and the possibility of being least likely to benefit from the circular economy (in which waste recycling or reuse is a part). To understand these broader issues of existing inequalities, waste and waste management – notwithstanding their capacity to become reproduced in the future if left unaddressed – Buckingham et al. (2005) showed that there was little understanding about why gender, for example, should matter. They found that women interviewed felt that 'if they were involved in the design of the recycling facilities, they would be more women and child friendly', that issues specific to women's social roles might be better met within the strategy. This includes promoting 'real nappies' and advice on reducing consumption. Their research supports the view that addressing gender equality (through gender mainstreaming) in waste management may be an effective mechanism for contributing to both waste reduction and reducing future inequality (Buckingham et al. 2005).

GREENHOUSE GASES

The evolution of inequalities in greenhouse gas emissions has received special attention. While $C0_2$ is the most abundant greenhouse gas, other gases such as methane and nitrous oxide should be considered. This section also considers the role played by fluorinated gases in Wales, partly because this is a largely devolved area of responsibility (compared to aviation emissions for example). Notably greenhouse gases differ from air pollution. Where greenhouse gases are gases that can absorb and trap heat, air pollution refers to the presence of substances in the atmosphere that have a detrimental effect on humans.

Notably emissions of nitrogen oxides are particularly damaging to health. Although UK's total greenhouse gases have fallen overall, emissions from road transport increased by 6% between 1990 and 2017, representing a fifth of UK greenhouse gas (ONS 2019d). The levels of nitrogen

oxide would have also increased in line with this, but due to increasing stringent exhaust emissions limits, nitrous oxide levels have reduced.

In Wales the existing recommendations for greenhouse gases in policy terms have been affected by our exit from Europe and responsibility for existing legislation. As Wales develops a new policy framework for Ozone Depleting Substances and Fluorinated Greenhouse Gases, it is noted that attention to greenhouse gases overlaps with our previous comments on the agricultural sector in Wales and efforts therein to reduce emissions, particularly methane. Fluorinated gases however are projected to increase due to increases in refrigeration and air conditioning. Existing recommendations include providing support for low carbon, including in the form of fuel poverty programmes; social housing Green Homes Grants; and private rented sector minimum standards.

The need to continue driving down both the levels of air pollutants and nitrous oxides was brought home starkly by the COVID-19 pandemic. People from Black, Asian and minority ethnic backgrounds who were hospitalised for COVID-19 were more likely to come from areas with the highest levels of deprivation and the highest levels of pollution (British Academy 2021a). The British Academy (2021a) report also showed that the 'lockdown' responses to the pandemic led to a big drop in pollution levels, returning at one stage to levels last seen in 2006. The British Academy (2021a) report states:

> Higher exposure to fine particulate matter with a diameter smaller than 2.5 microns (PM2.5) and to nitrogen dioxide (NO_2) is driving disproportionately negative outcomes from COVID-19 for Black, Asian and ethnic minority groups or that these groups are more likely to live in areas with high exposure to these pollutants (predominantly urban areas). While it may not be possible to draw a direct link between pollution exposure and deaths from COVID-19, pollution exposure in urban areas may be interacting with other inequalities which influence negative health outcomes and increase associated risk from diseases such as COVID-19.

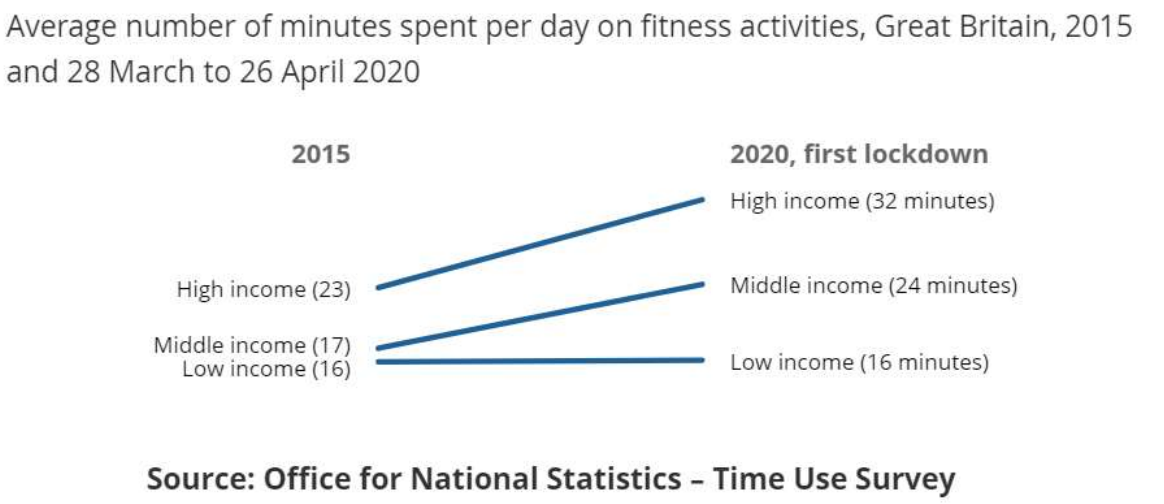
It also showed evidence of a wide range of structural factors being responsible for differences in the death rates between various groups. For example, men experience higher levels of pollution at work, due to employment type, and women experience higher levels of air pollution in the home due to poor housing (British Academy 2021a).

BEHAVIOUR CHANGE

The longer-term response to climate change or to an extreme event like COVID-19 is unknown. However, in the COVID-19 pandemic and especially during the first 'lockdown', there was an increase in the use of green spaces and local parks, time spent exercising and preparing meals, and an overall improvement in the positive interest in nature. This does not seem to have been sustained though, apart from an overall increase in the appreciation of nature (ONS 2021b).

What the data also shows is that changes, like exercise, were not equal across all groups. For example, not everyone has access to nature; and the greatest inequality is the distance between where someone lives and their local green space. One in eight people were found to not have a private garden, which is 2.4 times more likely for ethnic minority communities (ONS 2021b). Furthermore, increases in exercise were likely for people in high income groups than low income. Similarly, research has shown that women were more likely to be furloughed and to spend significantly less time working from home, and more time on unpaid household work and childcare (ONS 2021c). Women and single parents had less time for themselves (ONS 2021d). Access to and use of nature and the outdoors for recreation and exercise is unequal and is shaped by social and cultural factors such as the distance from where someone lives and the caring responsibilities that they have (MacBride-Stewart et al. 2016; MacBride-Stewart and Headington 2021).

Figure 3: High-income households increased their time spent keeping fit during lock-down, while low-income households did not



Source: ONS (2021b)

The existing recommendations for Wales include a focus on a digital transformation and a shift to flexible working as discussed earlier and on active transport or public transport. It must be noted that the 'building back better' approach has increasingly and widely been used in the post-COVID-19 landscape to incorporate these ideas. 'Building back better' is reflected in calls by the UN, Organisation for Economic Co-operation and Development, World Economic Forum and the UK Government that are not limited to behavioural change approaches, but which seek to embed lasting structural change at the heart of decision making. Emerging from the discourse of 'Building Back Better' is the understanding that it is possible to learn from the inequalities that emerged in COVID-19, and a need to address the societal and human rights dimensions of critical events like COVID-19 and climate change.

SUMMARY: CLIMATE CHANGE AND INEQUALITIES

The evidence from this overview suggests that decarbonisation is often framed as being beneficial for marginalised communities while addressing climate change. However, an analysis of the literature shows the risks of further perpetuating inequalities in each area. There are opportunities for positive change, but there is also concern that thinking about climate change has narrowed in recent years, with a move away from biodiversity and to ecological footprinting to decarbonisation, and less emphasis on the social and cultural drivers of consumption and inequality. This more technical and functional approach contributes to inequalities because it can avoid considerations of the lived experiences of communities or the realities of living in poverty in an otherwise affluent society. It is also important that climate change thinking does not become siloed and separated from equalities thinking and understanding.

We also make the following suggestions.

Transport: We advocate an approach to transport policy that accounts for the varied socio-economic and environmental factors that result from shifting to low carbon transport alternatives. Transport modality is not a neutral 'choice' for many people, and the inequality dimensions of travel in an area and for certain groups can profoundly shape the uptake of alternative travel solutions including electric vehicles, public transport and active travel (cycling, walking). Planning solutions need to recognise that work is likely to be the furthest away for those with the lowest incomes and that different social groups travel in different ways with different purposes (Shaw et al. 2020). The aim is to ensure that those most in need have access to effective transport for recreation, care and work, which does not further existing inequalities.

Buildings/housing: In addressing inequality in housing solutions towards net zero, we advocate the fair redistribution of resources to include low income households in private rented in addition to state-supported housing. This is so that people forced into private rentals or the most vulnerable also receive the benefits of lowered energy use and warmer homes. Including those with the least economic resources living in private rented housing is one way of tackling the impact that changing climate will have on housing-wealth inequalities (Christophers 2019). Other approaches could include people who own homes but have the least economic resources to suitably adapt their homes.

Electricity generation/fuel supply: It is our view that electricity generation and supply approaches need to adopt more inclusive approaches for transitioning to low carbon energy and renewables. As mentioned in the previous section, the energy transition sectors were overwhelming dominated by men in the lead actor positions within government, universities and business (Parken and Rees 2011). Unless this situation has changed, very few women, or diverse groups, will have the ability to influence over new strategies or receive direct employment or research or investment funding as a result of it (Buckingham and Le Masson 2017; Gonda 2019). There is a risk that gender disparity will be maintained from the 'old' fuel economy to the 'new' (Perrons 2005). Furthermore, communities affected by biomass and

other land-based supply (wind farms) are also overwhelmingly rural or poor communities. In encouraging and incentivising a diversity of solutions there is also a need for a principled approach to decision making to address energy poverty beyond Wales to consider solutions that address the needs of local and marginalised communities.

Agriculture/land use/ forestry: We also note that there is a gap in the data about the social, cultural, economic and environmental benefits of natural landscapes for the most deprived. We recommend that more is done to understand and reflect in policymaking how the natural world contributes to economic, cultural and social well-being; how green spaces differ in terms of benefits and, most importantly, how the positive benefits of green spaces could be more fairly distributed across social groups (MacBride-Stewart and Headington 2021).

Aviation and shipping: Previous work on carbon or ecological footprinting is one way of identifying the relative emissions between social groups (Alsamawi et al. 2017). It has been proposed as an equitable way forward for understanding how emissions related to aviation and shipping may differ between social groups and for which groups social and cultural changes reflecting the need to travel should be addressed (Oswald and Earnst 2019).

Waste: In the future it is important that the different resources needed by different communities to support pro-environmental actions towards waste reduction, such as recycling, are considered.

Greenhouse gases: An equality approach to climate change needs to reduce the exposure of disadvantaged groups to pollutants (for example actively monitoring and reducing air pollution in streets). At the same time structural factors like poor quality housing and proximity to pollution sources that increase susceptibility to health risks, and that reduce the capacity to cope with, and recover from these exposures, need to be addressed (Islam and Winkel 2017).

Behaviour change: Such policies can unjustly displace responsibilities for emissions reductions onto vulnerable groups. Foundational questions, such as what counts as acceptable inequalities in the different access to resources that can bring about social change, need to be addressed. One mechanism for answering these questions is by ensuring that those most vulnerable to and affected by climate change strategies are included as part of the decision making that sets out plans for equitable access (Sheppard et al 2011). Such effort is currently supported by the 'ways of working' framework for the Well-being of Future Generations (Wales) Act 2015.

While we have considered the inequalities related to the decarbonisation agenda, and the areas identified in the Climate Change Committee (2020) report, there may be areas that we have missed or overlooked. We reach three main conclusions for this section. Largely information on inequalities and/or future trends was often hard to locate. There is however emerging work in each of these fields and keeping updated with research will be important for addressing and understanding existing data and information gaps. Secondly, a structural perspective is central for understanding existing and future inequalities and its implication for policy. A wider range of perspectives may be available if we ask not just what inequalities exist

but rather why responses to climate change mitigation policies are distributed differently amongst social groups. Thirdly we have not addressed questions related to a consumption perspective: that is, asking why people have different demands for consuming resources, services and goods that can reduce or increase emissions. By taking a focus on decarbonisation and emissions to reflect the existing work of the Welsh Government and the Climate Change Committee (2020), we note that the decarbonisation offers a more limited range of environmental solutions than might be considered if we were to take an alternative ecological approach that considers the impacts on nature of consumption as well as production processes amongst different social groups (Schanes et al. 2020).

POLICY RENEWAL AND AREAS FOR ACTION

This section has reviewed and presented a range of evidence across several climate change policy areas with long-term consequences for inequalities in Wales. Much of the discussion about inequalities has focused on evidence of the societal effects we are seeing playing out today. This evidence has been assessed under nine main headings, all the while considering that the focus on decarbonisation may also limit the potential for understanding how inequalities are shaped by the policy agenda that has been set. We suggest that in response to this section that we progress with the following.

Future strategies should include those most affected by and most vulnerable to climate change and related policies. We suggest generating regional Citizens Assemblies as part of a public engagement approach so that local communities are involved in decision-making processes. This affirms and builds on the existing work of local authorities in Wales who are currently engaging the public on climate change, for example Blaenau Gwent Climate Assembly and Rhondda Cynon Taf's 'Let's Talk Climate Change' online conversation.

In its review of Wales' progress towards net zero, the Climate Change Committee (2020) called for a just transition[23] approach that formalises human rights and environmental justice in the decarbonisation agenda. Just transition can be a way forward towards widening net zero through integrated efforts to reduce inequalities across climate change and environmental decline agendas. Building on existing position in Wales (including legislation) we would support a place-based approach towards a just transition considering the work that the Public Services Boards already do as part of their Well-being Assessments and Plans under the framework for the Well-being of Future Generations (Wales) Act 2015.

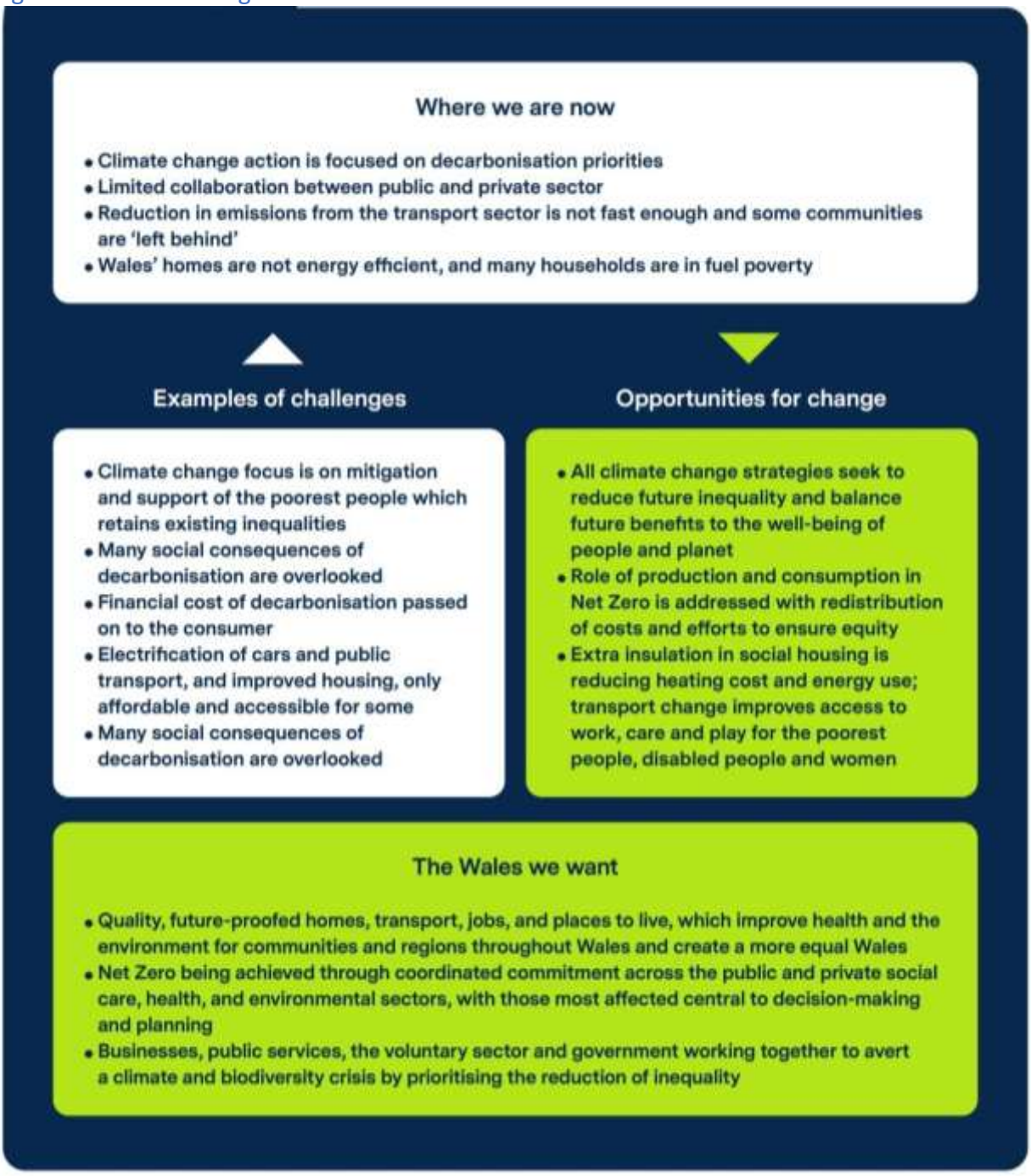
Other principles for moving forward include:

[23] Just transition is used to describe processes needed for equality in climate and environmental changes. We advise integrating three understandings of just transition: i) the human right to have an equal share in the benefits and burdens of climate change; ii) the human right to access the benefits of energy transitions at any stage of life; and iii) the environmental justice actions needed to involve people in development, implementation and enforcement of environmental laws, policies and regulations (Heffron and McCauley 2018).

- Welsh Government learning from United Nations Framework Convention on Climate Change and its work on climate inequalities
- Mainstreaming equality via equality groups into all areas of climate change understanding and response
- Establishing a set of principles for incorporating societal and cultural dimensions into climate change mitigation policy (via Well-being of Future Generations Act and/or Sandford Principle (National Parks))
- Understanding a gaps analysis to build learning on Net Zero future inequalities in Wales
- Developing specific incentives for improving places/environments in which people live
- Understanding the need for welfare solutions and greatest uncertainty for communities not policymakers

Figure 4 sets out where we are now and provides policy options for change in the context of reaching the 'Wales we want'. The figure focuses on the net zero priority areas of housing and transport. It explains what will happen if decarbonisation is assumed to have the same effect across all groups compared to if tackling inequality is taken into account.

Figure 4: Climate change



AREAS FOR ACTION

These areas for action have been informed by our review of the literature and initial discussions with stakeholders. They will be tested and developed further with stakeholders in the next phase of this work.

1) **Ensuring that all climate change/decarbonisation strategies progressed also reduce inequalities now and in the future by considering how they may impact on different groups and communities before decisions are made.**

This needs to recognise the overlapping importance of a wide range of policy areas to equalities and climate change/decarbonisation, such as housing, transport, energy, rurality and access to green space. The solutions should be tailored to each of the decarbonisation strategies learning from the existing experiences of inequality (i.e. in housing, etc.).

2) **Involving those affected by climate change and decarbonisation in policy decision making, either through existing platforms or by trialling new ones (e.g. creating citizens forums as part of a just transition approach).**

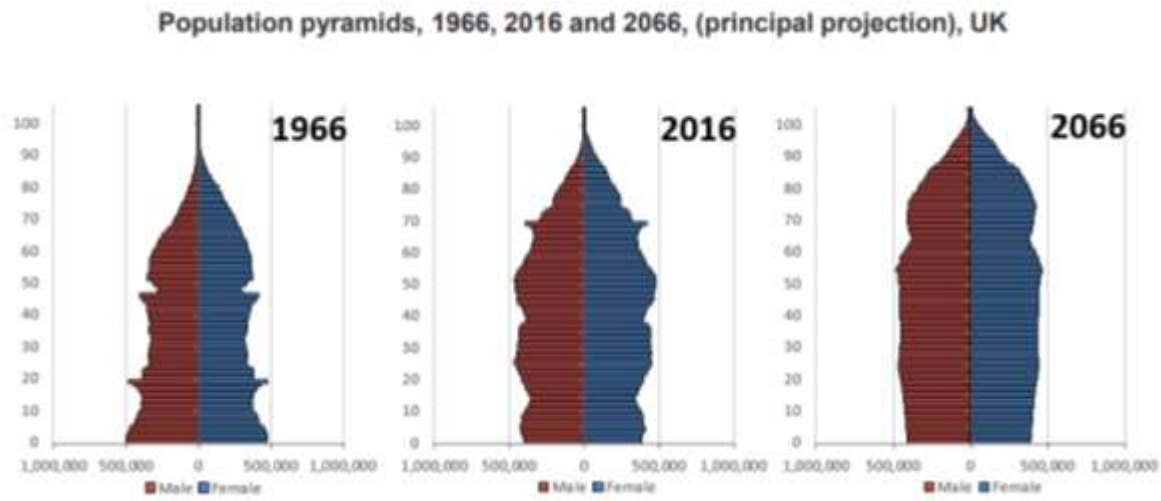
Figure 4: Climate change

DEMOGRAPHIC CHANGE

This section provides an overview of the characteristics of the changing trends in the population of Wales over the next 50 years, primarily based on Welsh Government and ONS data. This data will inform policy development by tracking how the population is changing and how these changes may be impacting on inequalities.

Demographic transitions will alter both the size and shape of the population (Diebolt and Perrin 2017). The trends follow improvements in life expectancy (people are living longer and reaching older ages, although not necessarily having more healthy years). Along with this, there is a decrease in the number of children per household. As the shape of the population shifts (see Figure 5) the number of people in the oldest age groups exceed that of those in the youngest groups.

Figure 5: An additional 8.6 million UK residents are projected to be aged 65 and over by 2066 – almost the size of London today



Source: ONS 2018

In global terms, within the next 50 years the share of the world population aged 60 or more will double from 10% to 22% (WHO 2014). By 2050 there are projected to be two working age people per one older person in Europe. Health and social care costs will increase, as will costs to maintain existing retirement standards across all age groups (PwC 2020; UN 2018).

The shifting demographic profile will produce economic, social, environmental and cultural effects. Changes in life expectancy may reflect improvements in patterns of disease and mortality. However, some of these changes are negative, and others are positive. For example, an ageing and growing population will require greater spending, but it may also be supported by increased numbers of women in the workforce and in leadership roles (Deloitte 2020). Resultantly the traditional balance of education, work, health and social care provision will become disrupted.

A fast-rising older global population may result in a rapid rise in inequalities across all areas of life (ONS 2018). As noted in our review of COVID-19 impacts, overall age inequalities have become evident. For example, over 60-year-olds have been at much greater risk of dying from the disease, but this risk of dying at older age increases for the least affluent and minority ethnic communities. While younger people, in precarious work, have faced greater job losses and mental ill health.

Inequalities caused by demographic change are especially important for Wales.

> Between 1998 and 2018, the proportion of the population aged 65 and over has increased from 17.4 per cent to 20.8 per cent, while the proportion of the population aged 15 and under has fallen from 20.6 per cent to 17.9 per cent. (Welsh Government 2020h)
>
> In 2017/18, the population of Wales was estimated to be 3,125,000, of which 830,000 (27%) are aged 60 or over. By 2030, it is projected that there will be over 1,008,000 older people in Wales – 33% of the total population. (Older People's Commissioner for Wales 2019)

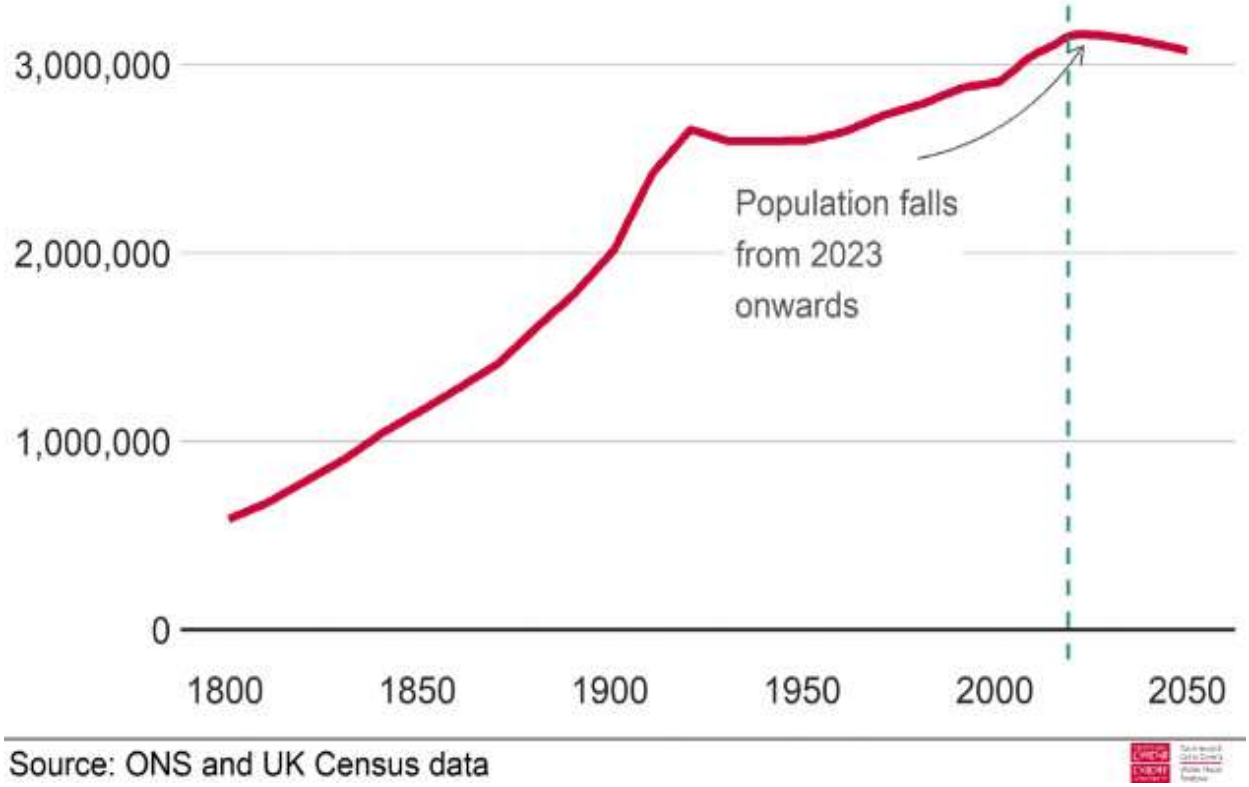
Wales' population is the highest it has ever been, but it is also ageing because of falling birth rates and migration (Welsh Government 2020h). The population is expected to continue to grow and then fall as we move to 2050 (Figure 6 below), although this may be slowed by improvements in life expectancy (ONS 2018; Sion 2019). However, there is a growing understanding that such improvements are not evenly distributed across different population groups.

Improvements to health care services, an increase in the number of households that are heated in winter and decreases in air pollution levels are positive examples of actions supporting people to live longer.

The emergence of regional variations is also important. South-east Wales has the most even distribution across its age groups and the largest population growth, but recent data shows that less populated areas, like Ceredigion, are already experiencing population contraction. Wales is also becoming a more ethnically diverse nation (ONS 2018). The percentage of the population who do not describe themselves as white British rose to 4% in the 2011 census from

the previous census (ONS 2011). As shown in Figure 6 below, the population overall continues to expand

Figure 6: Population estimates and projections for Wales 1800-2050



Wales Governance Centre at Cardiff University, 2019

Based on current knowledge, projections are that the percentage of the population who identify as non-white will greatly expand by 2050. Recent estimates from the Annual Population Survey show that 5.9% of the Welsh population described themselves as Asian, Black, 'Mixed/Multiple ethnic group' or 'Other ethnic group'. Currently, over 10% of pupils in Wales are from an ethnic minority background. That represents an increase of 62% since 2003/2004 (Young People and Education Committee, 2018). However, the proportion of the population identifying as BAME still varies considerably by local authority – from 1.7% in Wrexham to 19.8% in Cardiff (Clifford 2020).

The breakdown of the ethnicities and sexual orientation of older people in Wales is difficult to estimate because our methods of collecting and disaggregating equality data are poor. However, there is considerable interest in understanding the care needs of an increasingly diverse older population, and of the need for care organisations to understand the implications of existing human rights legislation (Addis et al. 2009). As intersectional data is not available, this section reviews changing trends for older age groups, and it concludes with support for the Welsh Government's proposed Race Equality Action Plan to improve knowledge and relationship gaps (Welsh Government 2021i).

Although it is not straightforward to directly attribute population projections to social and economic trends, increases in the population in Wales are unlikely to be evenly distributed. Notably, older people are more likely to live in rural areas than younger people (DEFRA 2016). This increases the ratio of older to younger people particularly in rural areas in Wales, including in its three National Parks. These rural areas, already experiencing the highest levels of older and retiree populations, are most likely to have widening population age gaps, and growing gaps between white and ethnic minority communities. A lack of affordable housing, poor transport and social isolation in conjunction with a 'rural premium' on key goods and services can create economic and social inequalities for adults living rurally (Williams and Doyle 2015). However, as reports of a recent boom in house buying have not been limited to south east Wales there may be effects of the pandemic that exacerbate the movement of wealthy (older) homeowners across Wales either for second homes or as new residents.

LIFE EXPECTANCY INEQUALITIES IN WALES

Declining mortality rates mean high life expectancies. Looking ahead 50 years, it will not be unreasonable for over 45% of children alive today to live until they are 100 (ONS 2018; ONS 2021e). Despite gains in overall life expectancy, life expectancy inequalities remain wide and have been worsening in Wales since the introduction of fiscal austerity in 2010 (Currie et al. 2021).

Life expectancy is closely related to the level of deprivation of areas – more deprivation leads to worse health and shorter life expectancy (Marmot et al. 2021). Current evidence shows that the extent of this gap is a difference in life expectancy of 4.5 years between the most and least deprived areas (Welsh Government 2018). Due to higher rates of death for some diseases (like respiratory, digestive and circulatory problems) in the most deprived areas, life expectancy gains have stalled, particularly for women (Currie et al. 2021). For example, data for Wales showed that between 2002 and 2018, the increase in life expectancy was half that for women in the most deprived areas compared to the least deprived areas, and two-thirds of that between men in the least and most deprived areas. Put another way, 'people living in more deprived areas saw year-on-year worsening life expectancy trends for four of the most recent periods with available data' (Currie et al. 2021).

Older age was the most salient factor in the health inequalities exposed by COVID-19. Data from the ONS has shown that 'people who were aged 80 or older were 70 times more likely to die than those under 40' (ONS 2021f). Of the people classified by the NHS as clinically extremely vulnerable to severe complications of COVID-19, 63% were aged 60 years and over. This was highest again for men and women from more deprived areas (ONS 2021f). The risk of dying was also higher for men, those living in the most deprived areas and minority ethnic groups. As Marmot (Marmot et al. 2020) concludes, much of this difference can be attributed to where people live and to socio-economic disadvantage, with existing inequalities leading to the worst outcomes for older people.

Patterns of existing inequalities for most ethnic minorities were echoed by worse COVID-19 outcomes (British Academy 2021a; Clifford 2020). This higher risk was particularly notable for older females who were of South Asian ethnicity. For example, a person aged 70 years and older of South Asian ethnic background is more likely to live in a multi-generational household (ONS 2020a, ONS 2021d). ONS data showed however that it was not just household arrangements that increased risk, but that this was an indicator for a number of other contributing factors. Living in overcrowded housing was combined with the greater exposure to societal stressors and other contributors to deprivation exacerbated any existing vulnerability to infection, as well as limited the physical resources that people had to deal with it (British Academy 2021a).

Longer lives also means that the experience of living into older age will change. It is projected that there will be more people living longer but with more years in ill health. Those in older age groups already report having worse health than younger groups, with those over 70 years being the least likely to report being in good health (Older People's Commissioner for Wales 2019). Wales currently has the highest rates of long-term life limiting illness rates in the UK. A longer lifespan means there will be a significantly higher proportion of people with ill health, many of whom will be women. This means more people in older age with care and support needs arising from a mixture of physical and mental health conditions (cancers, dementia and diabetes) along with the additional demands of frailty, hearing and sight reductions, and mobility limitations (National Assembly for Wales 2018).

This was echoed by contributors to the research:

> *There's going to be huge need for more care and I worry that it will be more informal unpaid care … [previous] research showed one in seven carers were unpaid, it's going to increase to one in five post-pandemic.* (Discussion Group Participant)

As the demographic profile changes, there will be a need to ensure that older people's care and treatment needs are gendered and culturally appropriate. For example, being able to keep cooking and providing one's own meals rather than replacing these with a meal delivery service may be more important for a person who has spent a considerable part of their life planning,

preparing and eating with their family compared to someone who has been a life-long recipient of this type of care. Food, diet and ways of eating are also culturally and religiously shaped.

As Wales looks to the future these findings about the worsening of life expectancy trends should be considered alongside the cross-cutting implications for ageing across multiple policy areas. The Marmot (Marmot et al. 2021) report Build Back Fairer reiterates this: 'given all the evidence about inequalities in risks of mortality from COVID-19 it is essential that all efforts at rebuilding have greater equity at their heart'.

Case study: mental health

One of the most significant examples of the structured yet differential health impacts of COVID-19 has been in the impacts on mental health. The pandemic and the various measures taken to address it have resulted in a greater awareness of the growth in mental health and the role of structural disparities as a root cause (socio-economic status, loss of autonomy) as well as impacts of the loss of informal support networks in particular for older people through shielding or a loss of contact with family, friends or others in daily lives (British Academy 2021a). However, despite the prediction that older people would have the greatest mental health impacts, these were greatest for people 18–49, supported by a number of studies reported in the British Academy report (2021a). Those aged 60 years and over reported higher than average scores on well-being, lower levels of anxiety, and of concern for their family members, and less likely to report being lonely. In comparison nearly all ethnic groups reported a deterioration in mental health in April 2020 compared with 2019 (ONS 2021g). Data from before and during the first lockdown, analysed by the Institute for Fiscal Studies, suggests that mental well-being had deteriorated more for those aged between 16 and 24 than for any other age group (British Academy 2021a). The concern about mental health impacts of a pandemic is that they represent the potential for future or later onset of mental health problems, which can persist into middle age.

IMPLICATIONS FOR THE ECONOMY, SOCIETY AND ENVIRONMENT

An ageing population may result in a rapid rise in inequalities. An ageing and growing population will disrupt the traditional balance of education, work, health and social care provision. Each of these social systems provide for people across all age groups and are organised to support the different needs of each. The changing pattern of ageing has implications for the roles of older workers, the availability and type of work, their financial stability and security (pensions and savings), and the resources available for care and support (Clarke and D'Arcy 2018).

Overall, an ageing population has different social care, health and housing, education and transport needs than a younger population. Meeting the standards of social and economic

provision at each stage of a life-course is essential for countries that want to achieve well-being and limit the number of years in poorer health. Based on the ONS (2018) report Living Longer: How Our Population is Changing and Why it Matters, this section evaluates the future inequality trends in ageing as a cross-cutting issue with implications for three main areas: economy and finance, social services and needs, and the physical, cultural and digital environment.

The existing pattern of ageing has implications for the economy. For example, this includes the role and distribution of older workers, the changing structure of the labour force, the availability and type of work, but also financial stability and security (pensions and savings). As social and health care costs will increase (Klein et al. 2017), projections for an ageing workforce mean that there will be proportionately more people of pension age for every person of working age compared to now (Foresight 2016). The younger generations are predicted to have less wealth than the previous generation with 'those aged 25 … worst affected, accumulating 84% less wealth than those aged 25, five years previously' (Clarke and D'Arcy 2018). There is a need for greater resources to support an ageing population which is predicted to produce consequential impacts on health and social inequalities.

However, there may be a trend for people to be working at older ages due to rises in the State Pension Age and insufficient occupational pensions. The employment rate already doubled for those 65+ between 1993 and 2018 (ONS 2018). Relative employment rates for older men and women are likely to change. As numbers of older workers increase this will also increase the numbers of older women who work. Similarly, the amount and source of income that retirees have will also likely change. An older and ageing workforce may have more income than a largely retired workforce. In comparison to younger workers, it may still be the case that older people have relatively more financial stability (income, home ownership and pensions and savings). Younger generations are more likely to never own a house or a car but use share/lend/borrow schemes. However, the idea that older people are better off financially is less likely to be the case for women. The Older People's Commissioner for Wales reports that:

> Around 1 in 3 of people aged 60–74 in Wales have incomes of less than £200 a week, or £10,400 a year. Women are often poorer, with almost half of older women having a personal income of less than £10,400 a year, compared to less than a quarter of men. (Older People's Commissioner for Wales 2019)

> Of those aged 70 years and over, 94% have sufficient financial assets to cover a three-month reduction of 20% in employment income, as do 78% of those aged 50 to 69 years, compared with 66% of those aged 30 to 59 years and 56% of those aged 16 to 29 years. (ONS 2021f).

Given the changing situation for young people, these projections into the future are uncertain. Policy must build in considerations of future poverty and instability. While a proportion of today's older people may be able to leave an inheritance or transfer wealth from one generation to another in the future, decreasing levels of home ownership and savings will affect

this, with current generations on course to have lower net wealth than the next (Foresight, 2016).

As we take account of the relative differences between the older age group now and those in the future, we need to consider their consequential impact on health and social inequalities. A good example of this is reflected in housing. Traditionally housing costs have tended to reduce with age as mortgage debt decreases. Houses have already become more expensive relative to incomes, and as more younger adults now rent than own (and as a result spend proportionately more of their income on housing (Foresight, 2016), the proportion of older people (65+) who own their home in 50+ years will also decrease.

There are other trends in the private and public housing market (Older People's Commissioner for Wales 2019) and it is not immediately obvious in the data whether this change will lead to a narrowing of the gaps between older people based on gender, ethnicity, socio-status and disability. Older women, ethnic minority communities and disabled people have traditionally performed less well than the UK average in terms of economic indicators and this is also true for financial stability and indicators of wealth (such as property ownership, savings, etc.). While the economic situation for younger women may be improving, the existing pay, pensions, savings and ownership gaps – which are significantly increased for ethnic minority communities and disabled people– may result in a replication of these existing inequalities.

We note that those classed as 'economically inactive' (i.e. unemployed or in caring roles) must be considered. With greater numbers of women in part-time employment and less likely to be self-employed relative to men, it is still women who, while living longer, might be projected to have lower levels of financial security and/or dependence on welfare. Reasons for inactivity might vary across the life-course, although where it is due to long-term illness or disability or significant caring roles, projected health and employment prospects into older age may also be significantly reduced (Foresight 2016).

> *More carers in the workforce means loss of retirement income … [restricted to part time etc.]* (Discussion Group Participant)

> *You have a fifty-fifty chance of becoming a carer by age 50 in Wales but it's younger for women, it's fifty-fifty by 42, that's 25 years before retirement age* (Discussion Group Participant)

Numbers of unpaid carers have been steadily increasing with the 2011 Census (ONS 2013) showing a 35% increase in unpaid carers aged 65+ between 2001 and 2011. In Wales 12% of the population are responsible for 96% of the care that is given in the community. While many of these are older carers (63%) who have care needs themselves, the care burden on some groups relative to others is already having profound effects on the capacity of some older women to retire well or enjoy their later years in good health. The main causes of these women having more years in poor health are rarely discussed, but the social and cultural contributors of ill health must be considered, many of which have remain hidden. For example, the Older

People's Commissioner (2021) reported her concerns about the levels of domestic violence and abuse for older people, which, combined with the increased levels of abuse reported during COVID-19, suggests a need to pay greater attention to the consequences on those people who are largely dependent on their home environment, or care services.

If current patterns of mixing care and part-time employment continue, women may experience lower levels of financial security, while living longer. The care burden for women across the life-course needs to be considered, so that inequalities are not solidified as the population ages. The number of people living alone and without family members is increasing. People aged 65 and over now make up 45% of single person households. An increase in the numbers of older people living in isolation or living alone challenges the assumption that older people have viable networks of care and social interaction. The social, emotional and physical consequences of care work can also be challenging, from social isolation and limited social networks (limited to care duties) to high levels of stress, heavy lifting and a reduction in personal time or recreation (Gambles et al. 2006).

Similarly, there are economic burdens of care. Ultimately, future generations of older people will find it harder to get by financially than current generations, but there will also be significant variations in economic stability in later life by gender, ethnicity and socio-economic position. With part-time employment more prevalent at older age groups for both men and women, the effects of this across gender, ethnicity and disability means that these groups are already less prepared for older age, even when increased levels of male unemployment after 50 years are considered (Davies et al. 2011).

There will be a need to find ways to provide health and social care services for an older age group. The spending on these services is highest at the oldest and youngest ages, although younger groups incur other costs like education and training. Mostly the support of this social and health care is provided by tax-payers. This is where considerable uncertainty exists: pension ages are increasing, the size of the contributing working age population is unclear but is also currently falling across Wales, as are future trends in migration.

Despite their increased social and health needs, older people already face significant access barriers to health and social care. A large international body of evidence suggests that older people consistently find it difficult to access health care when needed. Part of this is related to the discrimination that older people face relative to younger people. Mental health services for example may assume that social isolation or depression is inevitable, and efforts to change the structural barriers faced by older people may be overlooked.

A good example of this is found in the discourse about the positive value of green spaces during COVID-19 for boosting and promoting mental health (ONS 2021b). Much of this discourse has ignored the fact that over 70-year-olds were encouraged to remain at home (shielding) and there is evidence that while use of local parks increased, the increased use came mostly from younger age groups. Older residents not only decreased their use of parks but reported feeling

more anxious and decreased their physical activity accordingly (ONS 2021b). The question about whether people's behaviours have shifted to spending more time in nature may have a significant impact on the oldest generations, who would receive physical and mental health benefits from physical access to local green spaces. This negative finding for older people should not surprise us as older people have already been identified as being less willing to be in places in which they feel unsafe – physically or otherwise (ONS 2018). Older people for example are already more likely to report that they feel unsafe at night.

> Older people aged 60 and over are experiencing some aspects of the lockdown situation differently from younger people, worrying less about finances but worrying more about access to essentials. (ONS 2021g)

> During COVID all age groups except 80+ said exercise helped them cope with lockdown; younger groups were significantly more likely to spend time watching TV/using streaming services and other sources of digital interaction. (ONS 2021g)

The situation worsens for rural and ethnic minority communities. Larger populations of older adults in rural areas in the future may have less access to, and use of, health and other social services, resulting in greater isolation for those without family members or funds to visit relatives and friends. With decreasing family sizes in the future, and people living longer in poor health, the likelihood is that carers will be older at the same time as health care needs increase. This situation may exacerbate the already existing problems where those on lowest incomes, in economically deprived areas, find it most difficult to access health services. Other work on LGBTQ+ housing and care needs also identifies gaps in these areas (Addis et al. 2009).

Women, including those from ethnic minority communities, are more likely to have to provide care for another, or not to have caring and support for themselves. There is currently a gap in social care provision – despite the increase in the numbers of older people the number of care home beds has stagnated and the numbers of people receiving publicly funded home care has declined. Notably, in line with an overall shortage of low skilled jobs, there has been a trend for more men taking up paid care roles, but in line with the gendered division of labour, they are also taking the more well-paid management and leadership roles in these professions (Klein et al. 2017).

The economic vulnerability of women, ethnic minority communities, and deprived communities (and structural and cultural forces that traditionally align care work with these groups) means that they are disproportionately more likely to bear the burden of these care gaps. They are also more likely to be disproportionately affected by poorly funded social care, state reliance on private provision and social care workforce training gaps. As formal care needs are usually provided by women, this burden of care on women, ethnic minority communities and working class communities has a greater impact on their health. Current care models for older people disadvantage both the 'sandwich generation' – who may also have to care for

children and parents – and for these same women who, as they get older, are more likely to have been out of the workforce and have to care for partners than be cared for themselves.

With women living longer than men, more likely to be widowed, more likely to be living alone they will be less likely to have an advocate for their health. This is challenging if transferred to the formal care system (Welsh Government 2020i). Another trend for older people is that with nearly all marriages for people over 70 being remarriages, family members caring for them may not represent familial and obligatory relationships of care and responsibility, which is usually given as the reason for providing informal care and advocacy. The question then is not about the level of care is needed for older people, but rather what care is needed.

The changing social, cultural and technical environment has fundamentally altered the experiences of ageing and the ways in which age groups relate to each other. The promotion of digital environments has been proposed as a solution for this, with digital technologies providing older people with opportunities that would improve their ageing experience, like easier to access family and medical help as well as new social outlets. In the context of COVID-19, many GP consultations are now being conducted via video or telephone:

> Social distancing measures and efforts to reduce the burden on the NHS have seen an increase in GP consultations conducted via video or telephone. Such developments may make it easier for more people to access healthcare if they are continued, including better access for those with some disabilities and for those working or with caring responsibilities. (British Academy 2021a)

Before the pandemic, six million people in the UK could not turn on a device and up to 50% of those were aged under 65 (Ada Lovelace Institute, 2020). It is often older people who do not have digital skills and there is a research gap in understanding the implications for their access to such services. There is evidence too of a digital rift or divergence between generations where the needs, values, opportunities and skills to engage in digital technologies and services may differ. New possibilities about how to bridge that gap should be explored.

POLICY RENEWAL AND AREAS FOR ACTION

In 2008 the Welsh Government appointed the Older People's Commissioner for Wales. The role has invested in building experience, knowledge and an evidence base about older people's lives, views and experiences.

The approach in Wales follows the UN and World Health Organization (WHO) approach to ageing, where the focus has been on three main areas:

1) Ageism and age discrimination (WHO 2021) e.g. the WHO commissioned a report as part of their efforts to achieve a more age-integrated society (see also Officer and de la Fuente-Núñez 2018; Chang et al. 2020)
2) Human rights (UN 2016)
3) Creating age-friendly places (WHO 2018)

There are also specific prioritisations to address the health of older people as reported by the Welsh Government:

- The health of older people in Wales is an important priority and this is evidenced in its Strategy for Older People in Wales 2013–2023 (Welsh Government 2013). The strategy addresses social, economic and environmental factors that influence health (the wider determinants of health) and includes plans for the development of policies and programmes over the forthcoming years.
- The National Service Framework for Older People in Wales (Welsh Government 2006) set national standards designed to ensure that as we grow older, we can maintain our health, well-being and independence for as long as possible, and receive prompt, seamless, quality treatment and support when required.
- The Healthy Ageing Action Plan was a Welsh Assembly Government initiative to promote the health of older adults. It spanned the age range of 50 and over, recognising that some elements of healthy ageing begin at around this age.
- The Centre for Policy on Aging (2014) also identifies a number of other areas where Wales has been exemplary in promoting the rights of older people: Statutory Older People's Commissioner (a world first); Declaration of Rights for Older People; National Partnership Forum of Older People; Older People's Strategy Coordinators in Welsh Local Government; Older People's Champions and 50+ Forums in all 22 Local Authorities (CPA 2014)

Wales also has a series of social and care policies, to address the needs of an ageing population. These are also set out in the Welsh Government Strategy for Older People in Wales 2013–2023 (Welsh Government 2013). Examples of the range of policies are listed below (see strategy report for more details):

- Welsh Government Nest Scheme – to alleviate fuel poverty
- Pension Credit – tops up weekly household income for eligible persons
- Older People's Forums – established under the Welsh Government for Older People – aimed at ensuring older persons' voices were heard in decision making
- Delivering Digital Inclusion: A Strategic Framework for Wales (2016b) – supporting older people to feel comfortable using digital technology
- Public Health (Wales) Act 2017 – included a duty on each local authority in Wales to publish a local toilets strategy
- Concessionary Bus Pass – for people aged 60 and over

- Social Services and Well-being (Wales) Act 2014 – related to the provision of social care, including for vulnerable adults and adults lacking mental capacity. It embeds a rights-based approach by legislating for citizens to be an equal partner in their care and support
- Welsh Government has published its Dementia Action Plan 2018–2022, which aims to improve the support available for people affected by dementia.

This is a comprehensive suite of policy approaches that focus on a set of interrelated concerns for older people around i) well-being; ii) improving services; iii) independence; and iv) socio-economics. These are shared concerns with younger age groups and are the basis for understanding the potential for an intergenerational approach.

POTENTIAL EQUALITY IMPACTS – INTERSECTIONALITY AND INTERGENERATIONALITY

An ageing and decreasing population is a serious policy challenge for a fair and just Wales. Considerable uncertainties exist. However, there are two aspects that the evidence cannot overlook. Firstly, inequalities emerging in older age are often cumulative – acquired over a life-course of differential and often incremental opportunities (British Academy 2021a). Secondly, they are created by the social and cultural conditions of older age itself – disability, age discrimination, and loss of income, social status, and networks.

The overall approach to policymaking for an ageing population in Wales is around equality and efforts have focused on addressing the social and cultural conditions of ageing. Overall, Wales lacks an integrated plan for future inequalities. While there is, for example, some attention to the environment, there is limited attention to the urban/built environment beyond the provision of toilets and travel. While there is significant activity about considering how lives are and might ideally be lived in older age across several groups, much more could be done in bringing together the structural/environmental and cultural and social dimensions with the economic concerns about what the future for an ageing Wales looks like.

In understanding the future inequality trends for the demographic transition, it is important and essential to understand how ensuring equity must be fundamentally addressed across the life-course. This idea is not new. Marmot (Marmot et al. 2020 and 2021) repeated this claim across each of the reviews of inequalities in the UK. However, pressure on younger generations is mounting, as they pay into a system of taxes and social security. Social services and politics that are not necessarily designed with their interests in mind. This interpretation of a burden on young people is arguably value-based, supported by the idea that individual gains should reflect individual inputs rather than on the existence of a social contract and an appreciation of intergenerational support structures. However, with national-level evidence that addressing socio-economic and other inequalities across the life-course reduces inequalities in old age,

Marmot's view of a need to address structural inequalities across the life-course is well supported (Pijoan-Mas and Sanchez-Mas 2010; Kang and Rudoff 2016).

Low and unstable levels of trust and an exacerbation of intergenerational inequalities

The economic situation is a major contributor to the exacerbation of the low levels of trust between generations. Intergenerational divisions are also evidenced in environmental and climate change discourses creating tensions between older people who are perceived to be the largest carbon dioxide emitters due to their leisure, home occupancy and heating use patterns. Following a short increase in social solidarity during the early months of the COVID-19 measures, trust between the generations has been in decline (Klein et al. 2017).

The current uncertainty surrounding the financing of social care will affect our capacity as a society to build meaningful solutions. This includes finding ways to address a reported decline in trust between the generations. The solution may be to build intergenerational relationships that work towards creating a shared understanding of a common problem, for example, loneliness, and its contribution to the rise in mental ill health across both younger and older ages.

Towards an intergenerational approach

As a way of stimulating actions towards multi- or intergenerational structures, we therefore propose investment in intergenerational approaches that seek to improve actions for an ageing demographic. This is in line with the Welsh Government's (2019d) review of intergenerational mechanisms for improving health and well-being. Building on the existing work by the Older People's Commissioner for Wales and the Children's Commissioner for Wales on intergenerational approaches, investment is needed to improve support for our ageing society. Such investment would support the creation of better conditions for a future society by setting out a method for integrating intergenerational solidarity into policymaking.

A need for intergenerational approach is more obvious when we consider the inequality in care and work relations over the life-course, primarily the existing unequal distribution of paid/unpaid work or informal/formal care. Women are particularly disadvantaged largely because they spend more time doing work that is devalued or unpaid, or where formal work become the standard by which informal work or care is evaluated (Rummery 2021). Fraser's (1997) 'universal caregiver' model' provides an example of how an alternative approach can broaden our understandings about who and what is included in care. It fundamentally challenges the acceptance of women's current life patterns (relating to income inequality, leisure time inequality, equality of respect, marginalisation) to be the norm. Care approaches that foster change rather than support existing cultural norms are favoured, for example, persuading men to take up care roles (Rummery 2021).

The Women's Budget Group (WBG 2020) has also advocated for a care-led recovery, which expands the definition of green jobs to include care. This is an integrative approach that links care for the environment along with good, local, low carbon jobs/skills/training to childcare and the unmet care needs of older people, ultimately creating overall benefits for health, the environment and the economy. The Women's Budget Group note that care is one of the most consistent gaps in existing policies that address futures and future inequalities. The first stage of thinking about what an intergenerational approach needs to do is to consider the effects of unequal structures that shape care experiences across the life-course and to overcome traditional silos of age-related working (Marmot et al. 2021). This supports the Welsh Government's review into intergenerational practices as a key mechanism to address loneliness and social isolation among the population (Welsh Government (2019e).

In this overhaul of long-term policies related to demographic change we argue for an intergenerational approach. This lends itself as seeking the opportunities and understanding about how to address demographic transition through the consideration of intergenerational relationships and primarily seeking a common good, a social good and a core element of age-related policies. As one of the research participants expressed:

> *One of the things we need to address is increasing the contribution that older people can make towards our communities and economy. It's not just challenges that come with an ageing population but also lots of opportunities.* (Discussion Group Participant)

Proposal for an Intergenerational Approach to Demographic Transition

The question of how to best to take account of future generations that reduce rather than generate inequalities is a vexing one. This is because in the context of demographic and other societal change, it means asking how the interests of both future and existing generations can be met without the risk of considerable discord or distrust. We have focused only on the trends for an older and ageing population. This focus has enabled us to reveal some of the conditions of social and economic life in Wales that may be determining future inequity.

However, this approach could be criticised – and we argue that it should be – because it treats the accumulation of inequality as normative, and it could be seen to prioritise the needs of older people above others. We focused on ageing and older people largely due to time constraints, but this means that we largely found ourselves side-lining evidence about young people's needs, along with that of other generations. Therefore, we propose a shift to thinking about demographic transition as ageing across the lifespan (expanding out the concept also referred to as life stages).

Similarly, due to the challenges our participants had in imaging the futures for inequality we propose not having them make decisions about the short or the long term. Rather we suggest a more non-standard approach to addressing an ageing population. Using an intergenerational approach that sees ageing as a relational way of thinking between members of different

generations we propose the establishment of an intergenerational forum (i.e. Children's and Older People's Commissioners). We suggest that this could be part of a mechanism for identifying data (qualitative and quantitative) gaps on intergenerational needs. We propose that questions about care for example could be improved by an intergenerational approach to the care sector (users and providers) across domains of economics, health and social care, and digital access and technology. The overall aim would be to consider intra-generational diversity in the considerations for future equity across all age groups.

As a way of stimulating actions towards multi- or intergenerational structures, we therefore propose investment in intergenerational approaches that seek to improve actions for an ageing demographic. This is in line with the Welsh Government's (2019d) review of intergenerational mechanisms for improving health and well-being. Building on the existing work by the Older People's Commissioner for Wales and the Children's Commissioner for Wales on intergenerational approaches, investment is needed to improve support for our ageing society. Such investment would support the creation of better conditions for a future society by setting out a method for integrating intergenerational solidarity into policymaking.

Figure 7 sets out where we are now and provides examples of challenges and opportunities for change towards 'the Wales we want'. The figure focuses on making inequalities across all generations a thing of the past.

AREAS FOR ACTION

These areas for action have been informed by our review of the literature and initial discussions with stakeholders. They will be tested and developed further with stakeholders in the next phase of this work.

1) **Putting age equality at the centre of new policy development (an intergenerational approach), particularly for health and social care, mental health, community cohesion, digital inclusion and childcare. One approach could be to create an intergenerational forum for policymaking with a focus on integrative working.**
2) **Make care a shared and joint responsibility that meets the needs of a changing demographic. One approach would be prioritising a care-led recovery in the green transition.**

Figure 7: Demographic Change

LONG-TERM PROACTIVE POLICYMAKING: WELL-BEING, EQUALITY AND HUMAN RIGHTS

This report has set out how COVID-19 has exacerbated existing structural social, economic, cultural and environmental inequalities in Wales, across all the inequalities strands where data was available and added new data not previously analysed. We have considered these policy areas such as education, health, employment, housing, new ways of working and the climate, and identified new challenges to promoting equality from COVID-19, which overlay the existing entrenched inequalities.

The report also provides a deeper analysis of the future of work in particular automation (in respect of education, training, task and job redesign, entrepreneurship and welfare), climate change and changing demographics, highlighting potential future inequalities and how current policies, and new policies, will need to change or be developed to promote a just transition.

We have heard from organisations advocating for improvement in socio-economic inequalities about equality post-COVID-19, and longer-term concerns, and have had the benefit of their comment on our solutions thinking.

One question remains to be addressed based on this evidence – our recommendation for embedding equality and sustainable development in long-term policymaking. We set out two options for further consideration.

For either of the two following models to work we will need to address existing challenges to promoting equality:

1) Not all equality grounds understand or seek to promote equality in the same way, with some more focused on discrimination rather than structural inequalities, or cultural recognition than redistributive remedy (Fraser 1997; Parken 2010). The effect on equalities policy development needs to be acknowledged and incorporated – the two approaches can work contemporaneously.
2) Data gaps persist and given how inequalities sustain over time and geographical areas, we should be prepared to act to address inequalities based on UK data rather than wait for Wales-only data – although this should also be a priority.
3) Despite attempts to include a focus on socio-economic inequalities across the equality grounds, little attention has been given to this (there has been a tendency to focus on career progression for those already in well-paid work for example). The Socio-Economic Duty and Well-Being Duty need to be embedded on a redistributive basis.
4) The shift in language from equality grounds to protected characteristics is regrettable as it has an individualising effect and created equality silos. This has also taken the focus away from tackling structural social and economic hierarchies on an intersectional basis (Parken and the Well-being and Equalities Working Group, 2019).
5) Quantitative data has been privileged over qualitative data: intersectional understanding is best achieved through qualitative research and engaging 'experts by experience' in policymaking (Parken 2010).

To realise Wales' seven well-being goals, long-term thinking needs to be further embedded in policy development (FGCW 2020). Long-term policies on the future of work, climate and demographic change should be considered as key sites where inequalities could be diminished. To do this, the sustainable development principle, the setting of objectives towards achieving the well-being goals, and the stepping-stones to achieving this (the five ways of working), as set out in the Well-being of Future Generations (Wales) Act 2015, need to be brought together in a cohesive policy development method. The same has been said of achieving the statutory aims of the Public Sector Equality Duty – that a method is needed to bring together evidence and involvement in creating policy solutions, and the impact assessment and monitoring of policy solutions to promote equality (Parken and the Well-being and Equalities Working Group. 2019).

In this respect we set out two models which have the potential to embed equality and sustainable development in long-term policymaking for further consideration, development and integration.

THE INTEGRATED EQUALITIES AND HUMAN RIGHTS MAINSTREAMING MODEL

This is a collaborative 'learning practice' policy development model originally created to assist the Welsh Government with mainstreaming equality for all people and integrating human rights into policymaking on an intersectional basis (Parken 2010).[24] The method is based on creating collaborations between policymakers, academics, equality organisations and 'experts by experience', who, together, undertake an open and exploratory evidence review process. The model begins by questioning the way social, economic and cultural concerns are framed within existing policies, and leads to cross-cutting evidence-informed policy solutions.

The equality mainstreaming model was developed in action research with representatives of all the equality strands, and differs from standard methods of assessing inequalities, as it does not start from a single equality ground; rather it holds all inequalities in view in an examination of a whole policy field, allowing the salient evidence to rise, enabling prioritisation (Parken 2010). The processes within the model enable equalities evidence to 'activate' human rights, allowing us to draw on that framework for remedy or to improve public service standards. The model also creates 'political intersectionality'. This is where a solution for one equality ground also benefits other grounds but in different ways. For example, in an examination of unpaid carers, flexible working arrangements were seen to benefit disabled people and older workers as well as women. It is important to retain single equality ground voices in this process to provide rich, in-depth knowledge and shared learning, as well as through qualitative data, creating intersectional evidence (Parken 2010).

The Welsh Government accepted the recommendation of the 'Aligning Equality and Well-being Working Group' (Parken et al. 2019), for a 'real-time', properly resourced test of the model on a live policy issue, in a way that would also examine how to incorporate the requirements of sustainable development and the well-being duty. This was delayed by COVID-19.

JUST TRANSITION MODEL

The just transition approach to embedding equality in climate, economy and environment approach policies is one that would:

24 An intersectional approach seeks to understand the way in which equality grounds such as gender, ethnicity, disability and social class interact, producing unique experiences and compounding disadvantage in specific situations.

> Consist of a dual commitment to human well-being (with respect to income, education, and health) and sustainability (with respect to decarbonisation, resource efficiency and ecosystem restoration). (Swilling et al. 2016).

This aim is underpinned by a vision, and a set of principles that each public body uses to define and develop their own transitional opportunities and challenges. For example, the Scottish Government's Just Transition Commission has adopted the International Labour Organization principles (ILO 2015).[25] In summary, these are:

- Build a strong social consensus on the goals through proper investment in social dialogue;
- Respect and strengthen rights at work (including employment and social protection);
- Take account of and ameliorate the considerable impact on gender equality of change (and we would add an intersectional approach to equality);
- Create social, economic, environmental policies (and we would add cultural) that foster enterprise to take up the new challenges and opportunities;
- Decent work for all as a core principle; and
- Avoid 'one size fits all' approaches.

However, the literature does not set out a procedural method for embedding just transition in policymaking. As the definition of just transition used in this report includes environmental justice and human rights that extend beyond decarbonisation and net zero, there is a need to orientate its approach to include this within existing policy frameworks. Building on the work of the Future Generations Commissioner for Wales for example, there is a need to improve support so that just transition is embedded across all policy and decision-making areas. The existing legislation combined with local actions would be the starting point of creating such a method.

Either model, or a combination of the two, requires a cohort of 'experts by experience'. To ensure that participants are well informed and thus able to engage, there is a need for ongoing conversations and shared learning between environmental, futures training equalities advocates.

AREAS FOR ACTION

These areas for action have been informed by our review of the literature and initial discussions with stakeholders. They will be tested and developed further with stakeholders in the next phase of this work.

1) **Exploring ways of embedding equalities in decision-making processes. Options include just transitions and the mainstreaming equality and sustainability policy development models.**

[25] Scottish Government, Just Transition Commission: www.gov.scot/groups/just-transition-commission/ www.gov.scot/groups/just-transition-commission/

Successful approaches would need to sit within the framework set out by the Well-being of Future Generations (Wales) Act.

2) **Pursuing opportunities for ongoing shared learning between equalities advocates and policymakers around long-term thinking and planning. This should involve developing the expertise of equalities advocates in futures approaches and ensuring futures projects engage with equalities communities. This may be aided by the creation of an Equalities Future Forum or could build on existing forums, or be included in the proposed Welsh Government's Climate Justice Group.**

APPENDIX 1 – DISCUSSION GROUP PARTICIPANTS AND INDIVIDUAL DISCUSSIONS

Futures Workshop Participants (26 March 2021) - representatives from:

Bevan Foundation
Chwarae Teg
Equality and Human Rights Commission Wales
Institute for Welsh Affairs
Older People's Commissioner for Wales
Race Council Cymru
Tai Pawb
Wales Council for Voluntary Action
Wales TUC
Women's Equality Network
World Wildlife Fund

Further individual discussions:

Welsh Government Wales Partnership Council
Bevan Foundation
Carers Wales
Disability Wales
Professor Caroline Lloyd, Cardiff University
Welsh Centre for International Affairs

Findings and Solution Testing Workshops Participants (April 2021) – representatives from:

Bevan Foundation
Equality and Human Rights Commission Wales
Institute for Welsh Affairs
Race Council Cymru
Wales Council for Voluntary Action
Wales TUC
World Wildlife Fund

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