Futures for Wales

Foreword

Dr Tracey Cooper and Sophie Howe

Our Well-being of Future Generations (Wales) Act 2015 continues to have global recognition, putting Wales at the forefront of creating a different future for generations to come.

Whilst most public bodies have always had responsibilities in delivering a range of services to support health and well-being, one of the key innovative requirements of the Act is the focus on 'future' generations, which by definition requires new and different approaches. This in turn means new tools, new skills and a new and different mind-set in which planners, commissioners, policy makers and service providers need to take a long-term view to addressing health and well-being in their population and with their population.

Evidence suggests that, not unexpectedly, many of our public bodies and public services boards are struggling to adapt to this new approach and often unable to 'see' more than three or four years ahead. 'Futures' thinking is not new, but its application by public services has been limited to date.

It was with that in mind that this report has been prepared by Public Health Wales, in partnership with the Office of the Future Generations Commissioner, to assist public service boards (PSBs), public bodies, their stakeholders and partner organisations to approach the challenge more confidently and to identify and use the most appropriate tools and approaches for long-term thinking and planning.

Futures thinking is not about predicting the future but is about developing alternative futures or scenarios and using them to inform how best to move towards the preferred future. A number of approaches, methodologies and tools that have been tested in different settings and sectors are also described in this report and it is hoped that this will be of value to those charged with delivering this ambitious agenda.

This report makes 14 important recommendations for how public services should take their work on futures thinking forwards – these are based around:

● How futures work is embedded into organisational planning

● Building capacity and skills to do futures work

● Investing in futures tools and methods

● Utilising expertise and experience of futures work, from within Wales and beyond

● Collaborating and sharing insights and intelligence related to futures thinking

● Involving citizens and stakeholders in futures work

● Evaluating the change that happens as a result of futures work.

We want to play our part in driving this work forward, and we are investing together in a new post which will focus on futures research, in order to build capacity and share learning across the public service.

We look forward to continuing the conversation on futures thinking in Wales and we will seek to build on the learning and information provided by this report to anticipate and address both the emerging challenges and the opportunities that will arise as we move forward into the future in creating a healthy and sustainable future for Wales.

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Executive Summary

It is crucial that we think about and plan for the long-term in Wales. This is especially relevant and important now, given that:

- We are living in an increasingly changing and globalised world, where new developments and transformation over the next century will be greater than those of the previous millennia. This poses multiple and sometimes unknown challenges as well as bringing new opportunities.

- Current policies and practices (business as usual) are not sustainable in the longer term with high costs to citizens, communities and national and local economies. They lead to widening inequalities, threaten the health and well-being of the people; and harm the environment.

- Thinking about and working to secure the future for citizens and the planet has become a global trend. All countries have adopted the United Nations 2030 Agenda for Sustainable Development to '*end poverty, protect the planet and ensure prosperity for all*' through achieving the seventeen United Nations Sustainable Development Goals.

- Planning for the long-term can help us make better decisions in the present, which are more robust in the face of different futures. We will be better equipped to manage uncertainty and unforeseen challenges; to mitigate risks and unintended consequences; and to exploit and make the most of new opportunities.

- Wales faces persistent challenges across generations and settings, which cannot be tackled unless we take a multi-agency approach and start to consider and embed a long-term approach in everything that we do.

- Wales has adopted and committed to forward looking sustainable development legislation, the Well-being of Future Generations (Wales) Act 2015, which aims to create '*a Wales that we all want to live in, now and in the future*'.

Public Health Wales has produced this report to support policy makers, public bodies, Public Services Boards (PSBs) and other organisations across sectors, who are considering their approach to planning for the long term. The aim is to identify key intelligence and tools to enable the building of a sustainable future for the people in Wales, whilst addressing the long-term challenges we face.

This report forms part of Public Health Wales' response to the Future Generations Commissioner's review '*Well-being in Wales: Planning today for a better tomorrow*' and its recommendations. The review, which provides a summary of the information, key issues and themes included in Well-being Assessments, has concluded that there is a '*clear lack of capability and confidence in relation to looking at the long-term*' in Wales and that there

is a need to build capacity to help *'understand forecasting, future trends and the needs of future generations, including considering scenarios and trends which are less certain'.*

This report provides an overview of current thinking about the future key issues that may affect well-being in Wales and is primarily based on a review of 19 well-being assessments (assessments by PSBs of local economic, social, environmental and cultural well-being, carried out as a requirement of the Well-being of Future Generations Act 2015).

It also identifies some additional tools that PSBs and organisations may choose to explore. This report is not intended to represent Public Health Wales' forecasts for the future of Wales, nor does it aim to provide detailed information on futures work or projections. The report does not critique the reliability of predictions taken from well-being assessments; nor is it an exhaustive source of data or evidence.

This report facilitates capacity and capability building in performing **'futures work'** (thinking and planning for the long-term) and aims to promote discussion and debate across organisations and sectors, to help shape the future of Wales and the well-being of its people.

The report is structured in four main parts:

1) **Introduction** - looking at the definition, rationale, challenges, limitations and opportunities of futures work.

2) **Methodology** - outlining the methods and information resources used.

3) **Key report findings**

- **Part 1** provides a summary of potential issues that may impact on the future of Wales.

- **Part 2** briefly outlines **methods and tools** that might assist policy makers and organisations to look to and plan for the future.

A supplementary background report provides further details of the findings.

4) **Conclusion, recommendations and next steps** - outlining how Wales can embed long-term thinking and planning (i.e. futures work) across sectors and organisations.

Part 1 of this report, mainly drawing on findings from Well-being Assessments, suggests that if current trends continue, issues that could affect the future well-being of Wales include:

A changing population	• Wales' population is projected to increase by 5% by 2039, with the largest increase in those aged over 85 years, where the population will more than double. • By 2066, a 65-year old male can expect to live to 90.3 years (compared to 85.4 years in 2018) and a female to 92.3 years (compared to 87.6 years in 2018) in Wales. • In Wales, the ratio of older people compared with the working age population is projected to rise sharply by 2039. • People are living longer but not necessarily healthier lives, resulting in increased costs for public services.
A prosperous Wales	• Health spend in Wales could increase from 42% of revenue budget (2010-11) to between 57% and 67% by 2024-25. • Over the next 10 to 20 years, up to 35% of existing UK jobs will be at high risk from automation. • Advances in technology, computerisation and artificial intelligence could result in the loss of 700 occupations in the UK. • There is uncertainty around the impact of 'Brexit' on issues such as the rural economy, food security, the labour market and employment.
A resilient Wales	• In Wales, by the 2050s, it is estimated average summer temperatures will increase by 1.0-4.6°C, average winter precipitation will increase by 14% and average summer precipitation will decrease by 17%. • In Wales, climate change poses risks within the next two generations including from flooding; drought (with consequences for agriculture, farming and food production); and damage to ecosystems and biodiversity. • Public health effects of climate change include the emergence of new diseases, more heat related deaths and fewer cold related deaths. • Between 2004 and the 2080s, the cost of damage from flooding in Wales is estimated to rise from £70 million to £1,235 million annually.
A healthier Wales	• By 2025, with current efforts, smoking rates in Wales are likely to fall to 15%. • The proportion of adults who are overweight or obese in Wales is projected to increase from 58.3% (2013-15) to 62.2% (2025). • Projections for Wales show that between 2017 and 2035 there will be an increase in the number of adults with chronic conditions, including diabetes (from 186,365 to 220,376), heart conditions (from 253,406 to 321,986) and stroke (from 69,656 to 90,214). • By 2035, the number of adults with a common mental health disorder will increase from 417,121 in 2017 to 447,159. • The number of people aged over 65 years living with dementia in Wales is estimated to increase from 44,275 in 2017 to 72,769 in 2035.

A more equal Wales	• By 2024, the gap in healthy life expectancy between the most and least deprived fifth of the Welsh population is expected to be 12.7 years for females and 11.4 years for males.
	• Between 2014-15 and 2021-22 relative poverty in the UK is projected to increase from 21.3% to 23.6%, with relative child poverty increasing from 29% to 35.7%.
	• Welfare reform may remove £1 billion from the Welsh economy by 2025, equivalent to £550 a year per adult of working age.
	• By 2019, the annual household food bill is predicted to increase by £350.
A Wales of cohesive communities	• Approximately one in four adults living in the most deprived fifth of Wales report feeling lonely compared with one in eight adults living in the least deprived fifth of Wales. Some groups, such as lone pensioner households, are vulnerable to social isolation and this situation is likely to worsen in the next twenty years.
	• By 2020, social landlords will be required to improve housing stock to meet the Welsh Housing Quality Standard.
	• Within the next 10 years, all Welsh households are predicted to have access to the internet, if the current rate of growth continues. However, some groups, such as isolated older people, could become increasingly excluded.
A Wales of vibrant culture and thriving Welsh language	• There is an estimated loss of between 1,200 and 2,200 fluent Welsh speakers each year.
	• There is concern that the Welsh language is at risk of being lost to future generations, despite an increasing number of children and young people speaking Welsh.
	• It is anticipated that community running or ownership of venues and services will have a positive effect on cultural participation. Costs associated with accessing cultural and sporting activities are likely to negatively affect deprived areas.
A globally responsible Wales	• Of all the major British cities, Cardiff is expected to experience the largest increase in demand for gas (44%) and electricity (28%) by 2035.
	• By 2020, approximately 80% of fuels will come from overseas.
	• By 2021, one PSB area predicts that 67% of electricity consumption and 11% of heat demand could be through renewable sources.
	• Welsh Government has an ambition for a carbon neutral Welsh public sector by 2030, and the Environment (Wales) Act 2016 commits Wales to reducing emissions by 80% by 2050.

Key findings from Part 2 include the identification of tools and methods to enable a structured conversation about future uncertainty through **developing alternative futures** for study and evaluation. These tools will support individuals, organisations and government to envision and move towards their preferred future. From 14 Welsh, UK and international case studies, we have developed an understanding of how different tools,

used in combination, can help identify likely future issues, opportunities and solutions and can ultimately inform planning and policy making for the long term. Such **futures work** (thinking and planning for the long-term) allows individuals and organisations to align their strategies and investments to provide the best long-term benefits for current and future residents of Wales.

Our **recommendations**, based on our review of Well-being Assessments, expert advice and learning from case studies, aim to support Wales to become an early adopter and embed futures work widely. They are primarily aimed at public bodies and PSBs, but can be applied to organisations across sectors.

	Embedding futures work into organisational planning
1	Futures work must be integral to public bodies' and PSBs' responses to the Well-being of Future Generations Act.
2	Futures work should be used to stretch planning beyond short and medium term (3 to 5 years) horizons.
	Building futures work capacity and skills
3	Build capacity, skills and confidence for futures work through training, adapting tools, learning from case studies and seeking guidance from experts in the field.
4	Further build the skills of the public health workforce, so that they are able to support futures work.
	Investing in futures tools and methods
5	Optimise the use of data and technology and invest in modelling tools to improve understanding of future impacts of policies and decisions.
6	Focus Wales' futures work on addressing gaps in current knowledge and understanding or in areas of significant public sector spend.
	Collaborating and sharing insights and intelligence
7	PSBs and public bodies should share futures insights and collaborate on futures work.
8	Make relevant data, intelligence, evidence, case studies and promising practice readily accessible, for example through a regularly updated single repository.
	Utilising expertise and experience
9	Utilise the expertise of organisations (or individuals) experienced in carrying out futures work.
10	Learn from examples of futures work from other countries and consider how these can be applied to the Welsh context.
	Involving citizens and stakeholders
11	Involve communities and citizens across generations, including children and young people, in futures work.
12	PSBs and public bodies should engage cross-sector stakeholders across policy, practice and academia in futures work.
	Evaluating change
13	The status of futures work in Wales should be reviewed on a routine basis.
14	Any futures work undertaken in Wales should be evaluated.

Next steps for Wales include:

- Seeking advice from experts in the futures field to support direction setting and enable early progress.

- Identifying how expertise in futures thinking could be developed, where it is best placed and the level of investment required.

- Building networks between organisations across different sectors, with the aim of sharing learning from developing practice.

- Utilising readily available resources such as *Making a Difference: Investing in Sustainable Health and Well-being for the People of Wales*, which provide sustainable solutions to achieving better economic and health outcomes through interventions that have both short and long term benefits and support a preferred future for Wales.

Introduction

> *"By thinking creatively about the future – what might happen, what we would like to happen, what we would have to do to ensure that certain things happen – we, as individuals and communities, can prepare for tomorrow and make more rational decisions on the kind of future we desire and make an effort to achieve it."*
>
> Sardar (2013)[1]

Alternative futures

Futures is a way of thinking about future uncertainty, where there is not one future, but many alternative futures, some of which are more *probable* (likely to happen based on current trends) or *projected* (most probable future, assuming the future is a continuation of the past) and others which may be *preferable* (what we want to happen) (Figure 1).

Figure 1: Different futures
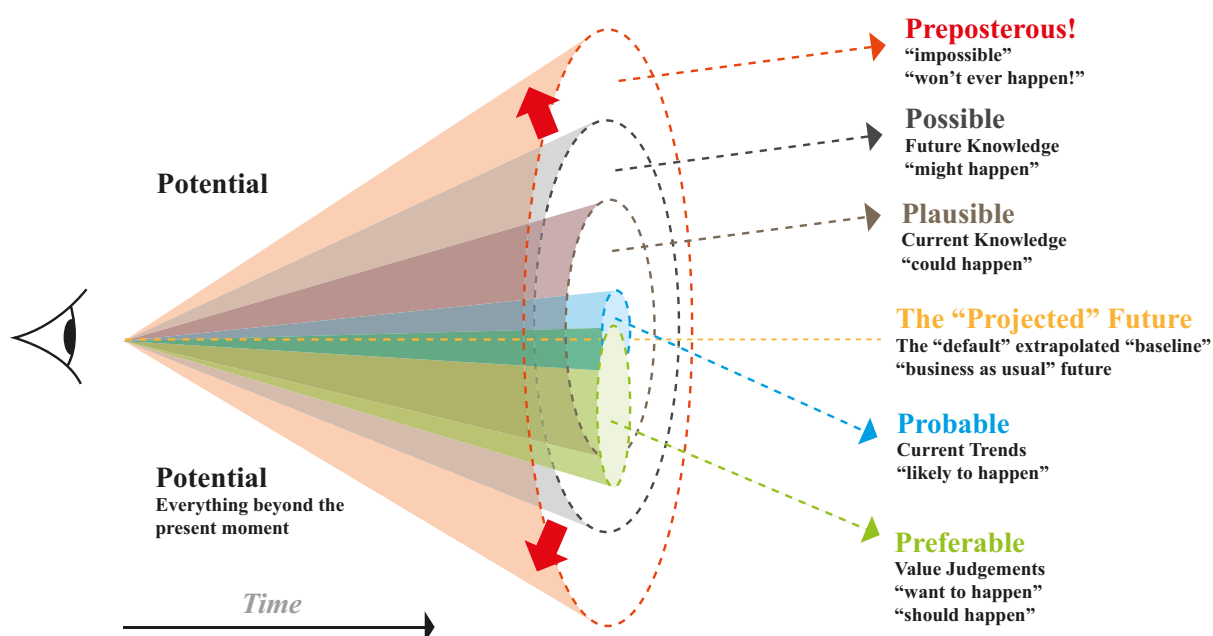
Potential

Potential
Everything beyond the present moment

Time

Preposterous!
"impossible"
"won't ever happen!"

Possible
Future Knowledge
"might happen"

Plausible
Current Knowledge
"could happen"

The "Projected" Future
The "default" extrapolated "baseline"
"business as usual" future

Probable
Current Trends
"likely to happen"

Preferable
Value Judgements
"want to happen"
"should happen"

Source: UNDP Global Centre for Public Service Excellence (2018). Foresight Manual. Empowered Futures for the 2030 Agenda. Singapore: United Nations Development Programme.

> *"If health futures focuses too much upon the **probable**, which it has a tendency to do (planners, be they politicians or civil servants, or private business persons, like to know what to plan for, as do ordinary people), then it runs the risk, perhaps inadvertently, of disempowering people and denying them choice. If they are told 'this is the **probable** future,' then the only choices left for them are how to prepare for it, how to brace for it, how to deal with it when it arrives.*
>
> *The **preferable** future, on the other hand, is a liberating and empowering future, especially when it touches our more creative capacities. It not only enables but encourages people to say 'This is the future that we value and that we want to create.' The energy and creativity released in a 'preferable futures' process can be quite astonishing."*
>
> Hancock and Bezold (1994)[2]

There is a long history and a variety of approaches to studying the future, which have emerged from different parts of the world, contributing to different methods and terminology that are in use today in futures studies. This is best illustrated in the array of terms that have been used to describe the study of the future (figure 2).

Figure 2: Timeline of terms used to describe study of the future

'conditional future contingents' Luis de Molina, 1589	'prospective analysis' Gaston Berger, 1957	'futures studies' World Futures Studies Federation, early 1960s	
'social mathematics' Concordet, 1804	'futurible' Bernard de Jouvenel, 1950s	'futures research' World Future Society, 1960	'futuring' Ed Cornish, Jerry Glenn, 2004
'Kondratiev long waves' Nikolai Knodratiev, 1930s	'futurology' Ossip K. Flechteim, 1946	'strategic management', various schools, since 1960s	'strategic foresight, Richard Slaughter, 1995
'foresight' H. G. Wells, 1932	'scenarios approach' RAND, 1940	'futures study' World Future Society, 1970s	'foresight' Coates, 1985

Source: Adapted from Sardar (2013)[1].

Why do futures work?

"the prospective changes over the next hundred years are probably as great as those which have occurred over the last thousand"

Richard Slaughter (futurist), 1996[3]

Thinking about and working to secure the future for citizens and the planet has become a global trend. All countries have adopted the United Nations 2030 Agenda for Sustainable Development[4] to *'end poverty, protect the planet and ensure prosperity for all'* through achieving the seventeen United Nations Sustainable Development Goals[5].

Futures work (thinking about and planning for the long term) facilitates developing an understanding of issues that could influence and shape the future, whilst supporting the development of policies or strategies that will prove robust in the face of many different futures. It can help when considering the challenges we are likely to face in Wales, as well as those that are unforeseen or uncertain. Looking to the future is an opportunity to involve citizens, utilising their insights, local knowledge and expertise to develop and move towards a joint vision, answering questions such as '*How do we want our community to look in the future?*'

We can speculate on the impact that factors such as climate change, global inequalities, declining biodiversity, automation, artificial intelligence and nanotechnology will have on the well-being of current and future generations. Futures work enables a creative, but systematic examination of the best and worst possible outcomes of these changes on our communities. At its most immersive, futures work can give participants, whether laypeople or policy-makers, the chance to visualise and critically reflect on possible futures.

Sometimes the future, its uncertainty and challenges might seem distant, inevitable or even overwhelming. It is tempting to dismiss the value of futures work on account of the fact that no-one can predict the future. We assume that predictions of the future are most likely to be wrong, thus feeling disempowered to express a view or take a decision or action for the long-term. Welsh Government's *Future Trends Report*[6] recognises that forecasting the future is *'an extremely difficult task'* and that thinking habitually for the long-term does not come naturally. The key to addressing such concerns is to acknowledge limitations of current approaches (see Box 1: *Limitations of trend extrapolation and projections*) and appreciate that the goal is to study and evaluate alternatives futures, rather than trying to predict the future[7].

Towards achieving a sustainable future in Wales

Long-term thinking and planning is imperative for Wales, in order to address current and future critical issues, such as climate change, health inequity and poverty; as well as to seize the opportunities presented by the Well-being of Future Generations (Wales) Act (2015) (hereafter referred to as 'the Act').

The Well-being of Future Generations (Wales) Act 2015

The Act is Wales' direct link and contribution to the United Nation's 2030 Agenda for Sustainable Development. Public bodies are required to think about the 'long-term' i.e. *'The importance of balancing short-term needs with the need to safeguard the ability to also meet long-term needs.'*

The Act does not define the time period meant by '*long-term*', as this will depend on the context of decision making. However, statutory guidance[8] states that a generation is considered to be 25 years, and organisations are expected to look at least 10 years ahead, with best practice being 25 years (or longer).

To understand the challenges we will be facing and where we are heading, Welsh Ministers must publish a **Future Trends Report**, which must take account of the United Nations Sustainable Development Goals and the impact of climate change on Wales and must contain:

 a) *Predictions of likely future trends in social, economic, environmental and cultural well-being of Wales; and*

 b) *Any related analytical data and information that the Welsh Ministers consider appropriate*

Each public services board (PSB, a local statutory partnership consisting of the local authority, the Local Health Board, the Fire and Rescue Authority and the Welsh Natural Resources body, as well as other invited participants) must prepare and publish an assessment of local well-being and must include predictions of future likely trends of the '*area'*[9].

Whilst there are numerous reports that consider the future, very few relate specifically to well-being in Wales. The introduction of the Act has initiated a change, with PSBs publishing their first well-being assessments (WBAs) containing data, intelligence and commentary relating to the future; and with Welsh Government publishing *The Future Trends Report*[10] in May 2017.

The Future Generations Commissioner for Wales has published a report providing an overview of information included in WBAs, including the key themes and issues that they highlight[11]. This has identified a *'clear lack of capability and confidence in relation to looking at the long-term'* and that the majority of assessments do not meaningfully consider the long-term, future trends or multi-generational policy challenges. The Commissioner has recommended further work to *'build capacity, expertise and confidence to understand forecasting, future trends and the needs of future generations, including considering scenarios and trends which are less certain.'*

The Commissioner has identified three areas where her office will support public bodies and other organisations to build future projections, insights and emerging trends to help make better decisions[12]:

● Key emerging trends and projections for Wales that will affect well-being

● Regular insight into emerging futures thinking and issues being raised globally

● Using future insights to provide more detailed analyses of key priority areas for action.

Futures work can assist policy makers and public bodies to generate fresh ideas about how they anticipate and transform the economic, social, cultural and environmental future of Wales.

Box 1: Limitations of trend extrapolation and projections

It is important that data-driven or projected futures, e.g. trend extrapolation and projections, are treated with a large degree of caution. These tools provide an estimate of what may happen, given our current situation and knowledge of past trends and are based on a large number of assumptions. For example, most projections assume that many, if not all, influencing factors stay static for the entire projected period, for example that there will be no major political, economic, social and environmental changes; no policies or interventions aimed at changing the current pattern; and no unpredictable changes in populations. Most also assume that there are no natural plateaus, such as seen with smoking, whereby the prevalence has plateaued after an extended period of decline. Projections methods usually assume there are no interdependencies between indicators which is often not the case, for example a decrease in deaths due to heart disease may lead to an increase in the prevalence of cancer, which is an age-related disease.

The simplest methods for undertaking projections apply current levels to predicted population changes, thereby taking into account factors such as the growing number of older people in a population. This method may be suitable for a static indicator; however, such an approach does not take account of any existing temporal trends in prevalence such as rising levels of obesity in a population. Using past trends may provide a more accurate short term trajectory, if there is a reasonably stable past trend, and in the absence of any known or expected changes to the indicator.

The further into the future we project using past trends, the greater the uncertainty that surrounds both the general trajectory and our estimates, with these projections indicating only what would happen if historic patterns continue and the population changes are in line with forecasts. There is no certainty that the observed pattern will persist, and there is no definitive way of anticipating the direction or size of any change. There is also no one definitive method of undertaking projections, with different methods yielding different results.

"We are made wise not by the recollection of our past, but by the responsibility for our future"

George Bernard Shaw

Methodology

A full description of methods is provided in the accompanying background report. In summary:

Part 1

A review of 19 Well-being Assessments (WBAs) covering all PSB areas in Wales was carried out, to identify evidence (quantitative and qualitative) that provided insights about the future of Wales. WBAs were used as the primary information source as these reports had identified much of the intelligence already available. The findings were collated and presented under the seven Well-being Goals of the Act, with an additional section on demographic changes. Where possible, information and data specifically relating to Wales was identified; where this was not feasible, data for the UK was used. Of note, WBAs are referenced in this section of the report; references to the primary sources can be found within the WBAs where this has been made available.

Part 2

Futures approaches, methods, tools and case studies from Wales and internationally were identified through a rapid literature review, as well as through input from experts drawn from academia, private sector and government. In addition, more detailed feedback was obtained from experts who participated in a roundtable discussion. The roundtable discussion followed a semi-structured approach and feedback was used to develop recommendations for the report.

Key report findings

Part 1:
Current understanding about the future in Wales

Approaches used in Well-being Assessments

While the Act requires WBAs to include predictions of future trends, it does not prescribe how this should be carried out. The approach, structure and level of detail for the 'future-related' information varies considerably between WBAs.

Overall, the WBAs are **structured** in the following ways:

Around the four **well-being themes** (economic, social, cultural and environmental) of the Act (10 WBAs)	Identifying **strategic topic areas** through engagement activities with local communities and staff (4 WBAs)
On stages of the **life course** from new beginnings through to older years (3 WBAs)	Through use of the 7 **well-being goals** or similar population wide outcomes (2 WBAs)

Approaches used by WBAs to identify future trends and issues include:

- Utilising **data and intelligence** available, including future projections and trends data and their possible impacts in the future. There has been very limited projection data available, with PSBs highlighting this gap. Available data, for example National Indicator Projections tools[13] produced by Public Health Wales, have been used to varying degrees. The limitations of long-term projections data are rarely considered[iii].

- Utilising '**futures tools**' such as horizon scanning.

- **Engaging with stakeholders and communities** e.g. through surveys, events and scenario-building workshops. PSBs have undertaken engagement activity with local communities and staff, some of which have been used to support thinking for the future. For example, one PSB asked primary school children "*What do you want well-being to look like in the future?*"

Much of the evidence used in the WBAs is qualitative and based on current issues and concerns.

Timescales in WBAs are often poorly defined, with approximately a third of WBAs using 'short, medium and long term' timeframes for looking to the future. Some WBAs explicitly identify short-term timescales as being 5 years, medium-term 10 years, and the longer term as 25 to 50 years.

The following synthesis of findings has been structured around the seven well-being goals for Wales, with an additional section on demographic changes. However, all the themes and topics identified are interconnected and interdependent (as are the well-being goals).

Of note, this report does not capture activity since the WBAs were published in 2017; several local areas have since started to undertake long term planning or horizon scanning.

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iii   Projections are estimates based on assumptions about the future. Short term (3 year) projections provide an indication of the direction of travel if the pattern in the observed data persists. Longer term projections need to be viewed with extreme caution and only indicate the general trajectory if the pattern in the observed data persisted in the long term. Source: Public Health Wales Observatory 2017. Well-being of Future Generations Act: National Indicator Projections. Technical guide. Cardiff: Public Health Wales.

A changing population

Key messages

- Wales' population is projected to increase by 5% by 2039, with the largest increase in those aged over 85 years, where the population will more than double.
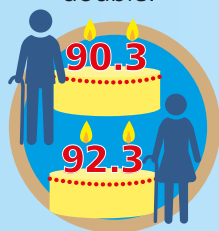
- By 2066, a 65-year old male can expect to live to 90.3 years (compared to 85.4 years in 2018) and a female to 92.3 years (compared to 87.6 years in 2018) in Wales.

- In Wales, the ratio of older people compared with the working age population is projected to rise sharply by 2039.

- People are living longer but not necessarily healthier lives, resulting in increased costs for public services.
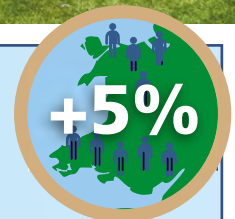
Between 2015 and 2039, Wales' population is projected to increase by 5% from 3.1m to 3.28m[14]. The largest increase is likely to be seen amongst those aged over 85 years, where the population is set to more than double (127% increase). The number of people aged between 65 and 84 years is projected to increase by 27%[15].

Figure 3: Population projections by age group, absolute (count) and relative (percentage) change between 2016 and 2039, Wales. Relative change chart has a logarithmic x-axis
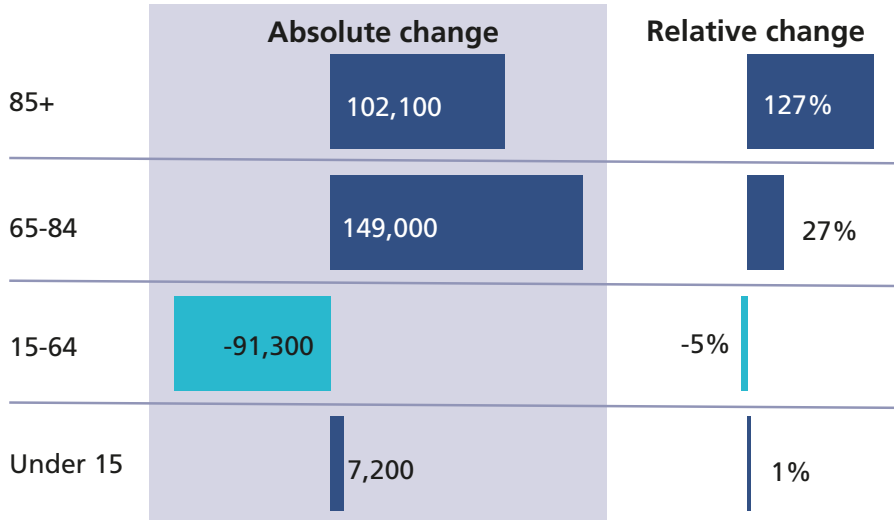
Source: Public Health Wales Observatory, using MYE & 2014 based population projections (ONS)

The increase in the number of older people will mainly be the result of the ageing baby boomer population and increased life expectancy in Wales[16]. By 2066, a 65-year-old male can expect to live to 90.3 years and a female to 92.3 years, compared to 85.4 years for a male and 87.6 years for a female in 2018[17]. Of note, the rate of increase in life expectancy at birth in the UK has slowed in recent years (1980-82 to 2009-11 compared with 2010-12 to 2014)[18] .

Figure 4 shows the projected change in dependency ratio (number of children and older persons compared to the working age population) between 1991 and 2039 in Wales, with a sharp increase in the ratio of older people, whilst the ratio of children under 15 years will remain stable. This increase in ratio of older people indicates there will be a greater dependency on the working age population due to increased support and social services requirements[19].

Figure 4: Projected ratio of persons 65+ and under 15 per 1,000 aged 16-64
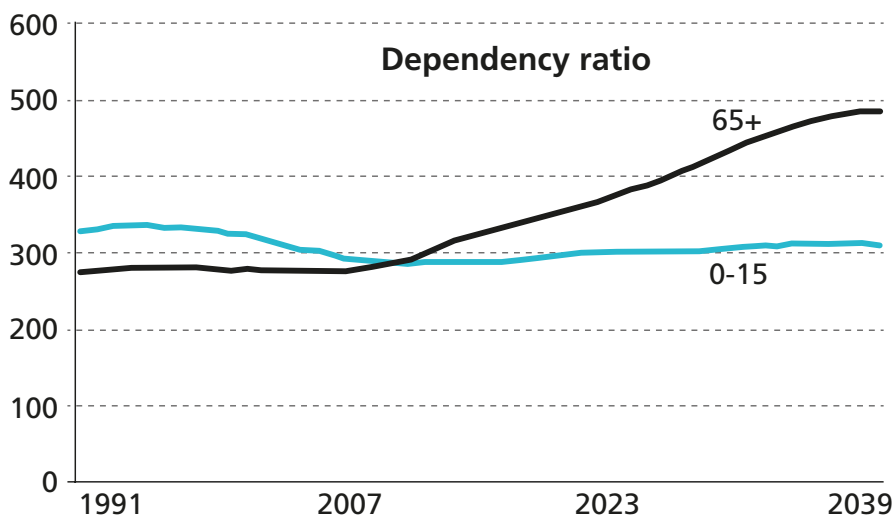
Source: Welsh Government. Future Trends Report. May 2017 (Population section, slide 12)

Demographic changes are likely to affect larger towns and cities to a greater extent, as they are expected to experience higher population growth compared to more rural areas. Figure 5 summarises projected changes by local authority between 2014 and 2039.

Figure 5: Population by local authority in 2014 and projected population in 2039

Local Authority	2014	2039
Isle of Anglesey	70,200	68,300
Gwynedd	122,300	132,600
Conwy	116,300	118,200
Denbighshire	94,800	97,300
Flintshire	153,800	155,900
Wrexham	136,700	150,000
Powys	132,700	122,400
Ceredigion	75,400	82,100
Pembrokeshire	123,700	122,200
Carmarthenshire	184,900	188,900
Swansea	241,300	262,900
Neath Port Talbot	140,500	142,700
Bridgend	141,200	148,300
Vale of Glamorgan	127,700	128,100
Cardiff	354,300	444,700
Rhondda Cynon Taf	236,900	246,500
Merthyr Tydfil	59,100	58,100
Caerphilly	179,900	181,900
Blaenau Gwent	69,700	66,300
Torfaen	91,600	91,200
Monmouthshire	92,300	92,500
Newport	146,800	158,500

Source: StatsWales

Potential consequences of the demographic shift:

Health and social care

- Life expectancy has increased at a faster rate than the growth in healthy life expectancy, resulting in increased costs for public services. Health and social services and unpaid carers will face additional pressures due to long-term conditions, increasingly complex care needs, and lengthier and increasingly frequent hospital stays[20,21]. Changes in state pension age may lead to increased incapacity benefit claims from older people unable to remain in the workforce[22].

- There will be increased pressures on residential and nursing home accommodation. A range of housing options will be needed to allow older people to live independently in environments that support well-being. In addition, communities will need to become more 'age-friendly' to facilitate access and participation for people of all ages[23].

Economy and labour market

- A decline in the working-age population relative to the number of pensioners could result in lower tax revenues, placing a strain on the local economy and on the resources needed to provide health and social care[24].

- Older people currently contribute over £1 billion (net) a year to the Welsh economy, even after welfare, pensions and health costs are accounted for. In the UK, the net contribution of older people is anticipated to increase from £40 billion to nearly £75 billion per year between 2010 and 2030[25].

Housing and household numbers

- By 2036, there are projected to be an additional 190,000 households in Wales (15% increase). However a growth in the number of households with one or two persons without children will mean that the size of average households will decrease[26]. The growth in household numbers is not expected to be uniform across Wales; for example, by 2024, there is likely to be 32% increase in the number of households in Cardiff, compared with no change in Blaenau Gwent[27].

A prosperous Wales
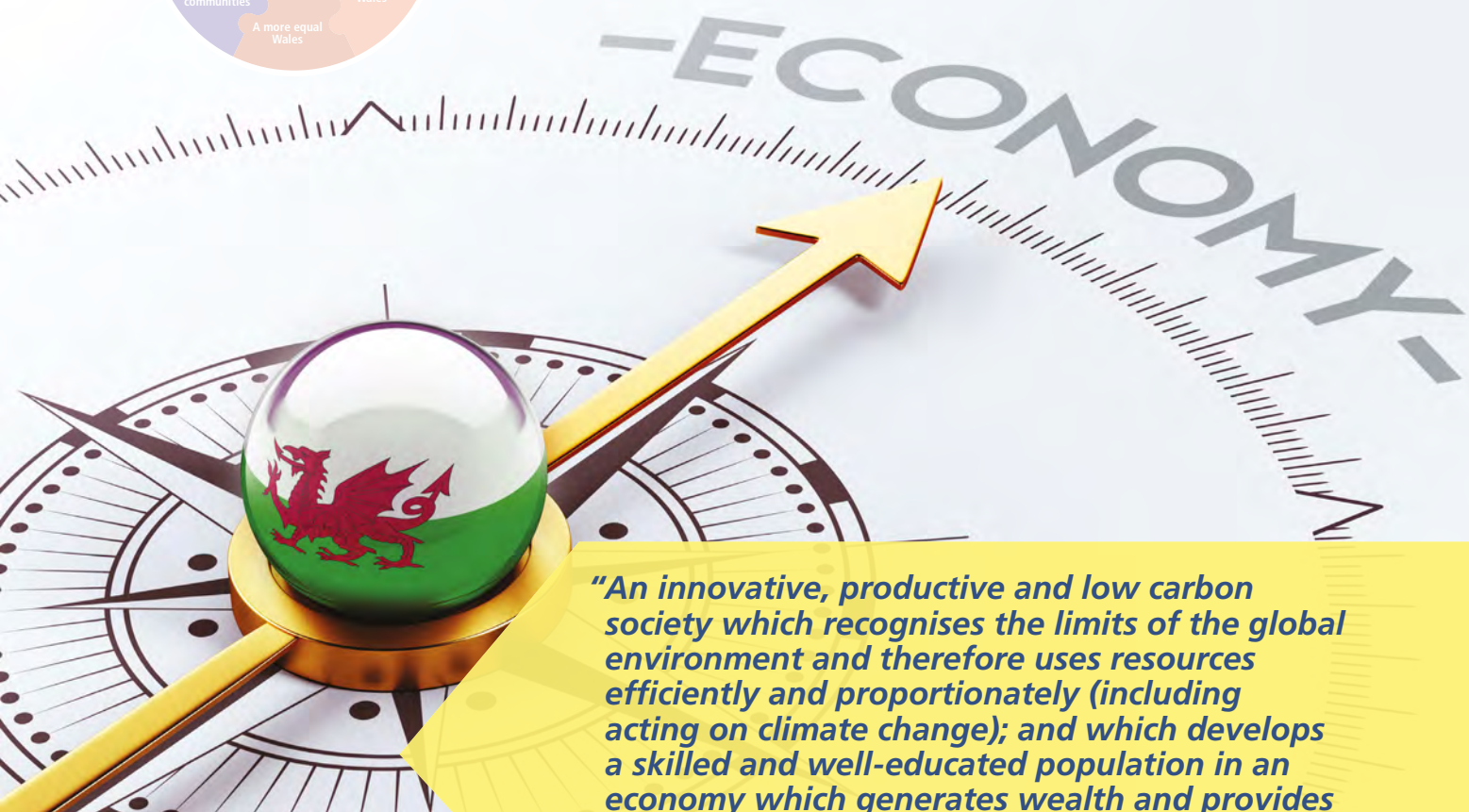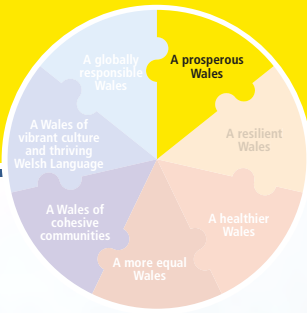
"An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work."

Key messages

- Health spend in Wales could increase from 42% of revenue budget (2010-11) to between 57% and 67% by 2024-25.

- Over the next 10 to 20 years, up to 35% of existing UK jobs will be at high risk from automation.

- Advances in technology, computerisation and artificial intelligence could result in the loss of 700 occupations in the UK.

- There is uncertainty around the impact of Brexit on issues such as the rural economy, food security, the labour market and employment.
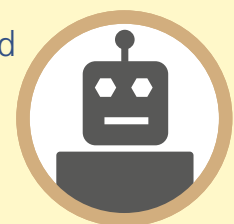
The Welsh economy

The Welsh economy is embedded within the economy of the UK and is influenced by UK and global economic, social and political developments[28]. Most WBAs consider the future economy, either in terms of global trends or with a focus on Wales, and provide commentary on potential issues and concerns, although accompanied by very limited data, research or qualitative evidence.

Several PSBs voice concerns about an uncertain economic future and possible national and global economic downturns[29,30]. The uncertain economic climate is reflected in UK central GDP growth forecasts, illustrated in Figure 6. The graph is based on previous forecasting performance and shows the central (median) forecast (solid black line), together with the probability of different outcomes[iv]. The chart implies that in 2018 or 2019, there is a one in four chance that the economy will shrink.

Figure 6: Real GDP growth fan chart to 2022.
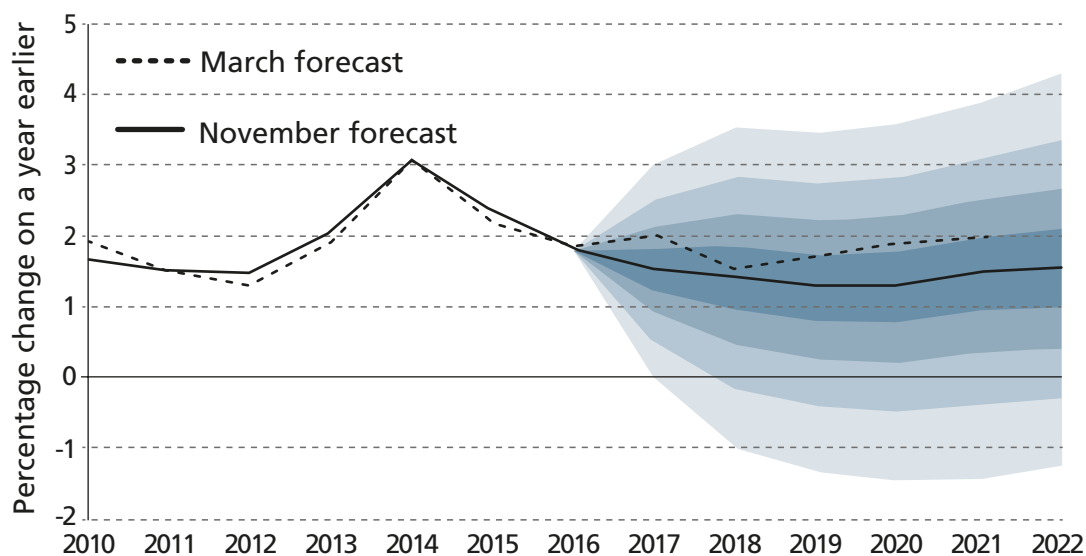
Source: ONS and OBR[31], cited in Monmouthshire Well-being Assessment[32]

WBAs also identify a range of influences on the future economy including technological change (including automation, automated driving[33], the coming of the 'Fourth Industrial Revolution'); increasing global competition and globalisation (accompanied by increasing disenchantment[34]); and major policy initiatives such as promotion of low-carbon technologies.

Specific issues relevant to Wales include the need to consider succession planning in the rural economy (with younger generations pursuing different career choices[35]) and a greater reliance on the public sector to provide employment, where any public sector job losses or reduction in services is likely to impact other local businesses[36,37].

Community view

Cwm Taf WBA includes residents' views on what they feel is essential for their current and future economic well-being. Older people have tended to express a belief that, whilst they may struggle, they are in a relatively strong position compared to young people, and that *"things will only get worse for future generations, the young people are the ones that will really feel the impact of the cuts"*

(Whealle, 2016)[38]

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iv   The fan shows the probability of different outcomes based on past errors on official forecasts. Successive pairs of lighter shaded areas represent 20 per cent probability bands.

Sustainable public services

The UK Government has an ongoing commitment to a policy of austerity, which was initially enacted following the financial crisis of 2008. Welsh public services are continuing to be affected by austerity and longer term ongoing pressures on budgets. Overall, the budget for Wales will be 8% lower in real terms by 2020 than it was in 2010[39].

A recent Welsh report '*Future Pressures on Welsh Public services to 2025*'[40] notes whilst spending on public services is going down, there are longer term increasing demands on services, as well as rising expectations on service quality. By 2025, public services in Wales could have a revenue funding gap of between £2.6 billion and £4.6 billion (at 2010-11 prices) and this gap could continue to increase even when budgets rise again. By 2024-25, health spend could increase from 42% of the revenue budget (2010-11) to between 57% and 67%. The report highlights that all responses involve a level of risk and that top-slicing budgets or protecting some services could harm economic, social and environmental outcomes. Taking a proactive approach and developing new service delivery models would secure better outcomes for less[41].

Public Health Wales' report '*Making a Difference: Investing in Sustainable Health and Well-being for the People of Wales*'[42] identifies how fiscal and economic challenges (including austerity) require public services and policy makers to utilise evidence and expertise to achieve better economic and health outcomes for Wales, with preventative policies and interventions having short and long term benefits for society and the economy. Continuing current investment policies and practices have unsustainable economic and societal costs; an approach built on investing for health and well-being and utilising evidence based solutions can help drive economic sustainability[43].

Implications of 'Brexit'

Many, but not all, PSBs identify that Brexit will have a significant influence on the economy, offering both threats and opportunities, depending on the nature of UK's future relationship with the European Union (EU)[44]. There is particular uncertainty around the potential impact on areas that are recipients of EU funding[45,46,47,48]. Special attention is given to the potentially significant impact on the rural economy[49, 50,51] with uncertainty around how current support, such as the Common Agricultural Policy, will be replaced[52, 53,54]. Other issues identified include food security[55], the labour market and employment[56].

A changing workforce

Global economic changes are likely to have significant impacts on the jobs market. Over the next 10 to 20 years, 35% of existing UK jobs will be at high risk from automation. Unlike mechanisation of the past (where human participation has been required to provide information or instruction), white collar professions are likely to be affected[57].

The '*Welsh Government Future Trends Report 2017*'[58] highlights that automation and new technology has not resulted in an overall shortage of jobs to date. However, according to the Bank of England, in the next decade, a third of UK jobs are at risk of automation and advances in technology, computerisation and artificial intelligence, resulting in the loss of 700 occupations. As a result, there will be profound changes in the future workforce.

65% of children entering primary school will work in an occupation that does not yet exist[59].

The impact of new technology on the workforce

Technological advances such as robotics and 3D printing are likely to support increasingly efficient production processes and more automated services[60]. One PSB[61] has identified occupations most likely to be automated, including routine office-based jobs (e.g. data entry) and physical occupations in standardized settings (factory-based manufacturing). Jobs at least risk are those involving a high level of personal interaction (e.g. care workers) or higher level research and management. In the longer term, automation could mean that skills and knowledge-based employment are highly valued[62].

The growing importance of a highly skilled workforce

Wales has a lower employment rate than the UK (73% in Wales compared with 75.4% in UK during December 2017 to February 2018[63]), and a higher proportion of those in work do not carry out 'high value' or 'high skill' jobs[64]. Of note, the qualification levels in Wales have been increasing at a similar rate as the rest of the UK, with the proportion of working age adults with graduate level qualifications in Wales higher than in many other English regions[65].

Similar to other developed nations, it is forecast that there will continue to be increasing demand for those with higher level skills, while the demand for lower level skills (particularly those that could be automated) is likely to fall[66].

In Wales, projections demonstrate a trend towards increasing numbers of people in caring, leisure and other service jobs and professional occupations, rather than administrative and manufacturing occupations[67] (Figure 7).

Figure 7: Projections of employment by occupation, Wales, 2014-2024 projections
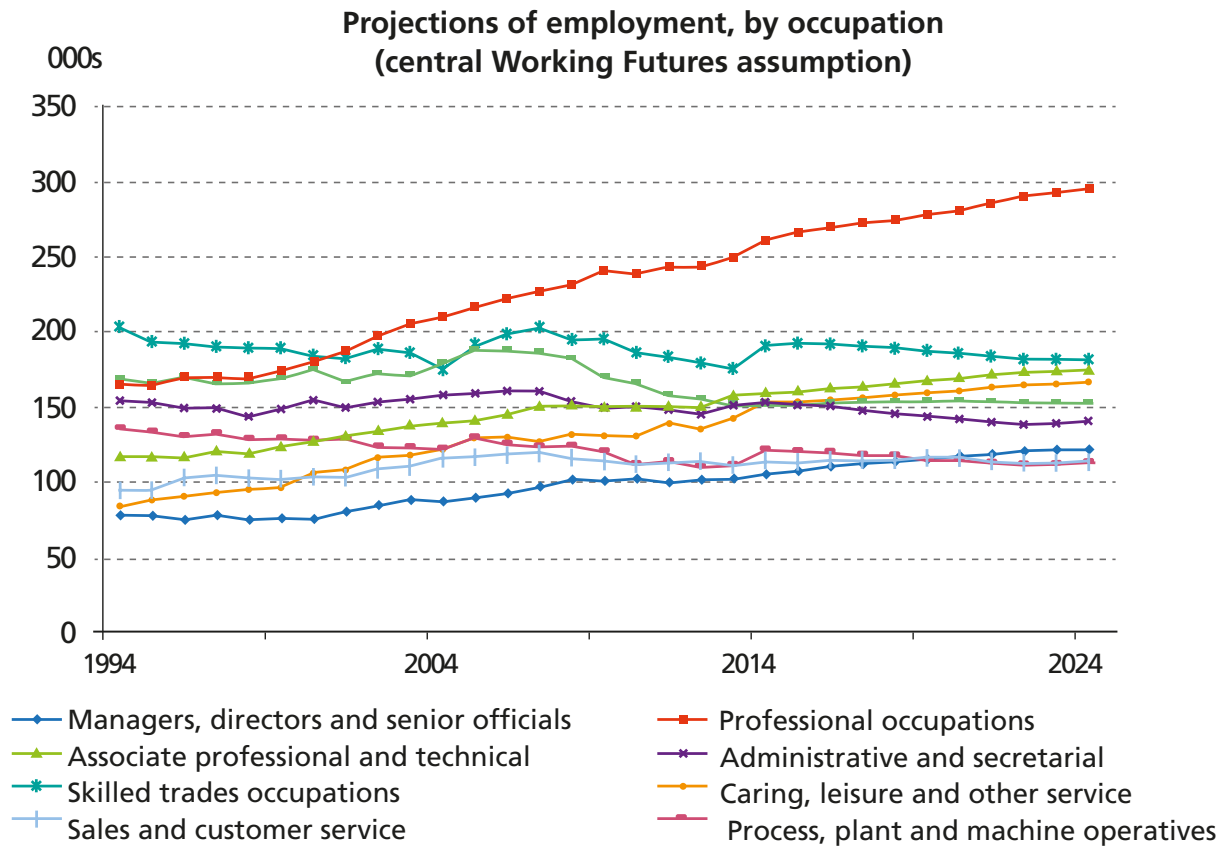
Source: Working futures, UK Commission for Employment and Skill, May 2016. Reproduced from Wrexham Well-being Assessment[68]

Qualifications, income and mental health

There is a strong relationship between pay and qualification levels, with higher pay in those qualified to degree level or above; this has not changed despite recent increases in the number of people with higher level qualifications[69]. Recent research[70] has also identified a strong relationship between financial security and current mental illness (Figure 8). 8.0% of those who have felt financially secure for at least 5 years report having a current mental illness, compared with 31.6% of those who have felt financially secure for a month or less.

Figure 8: Proportion with current mental illness by perceived length of financial security.
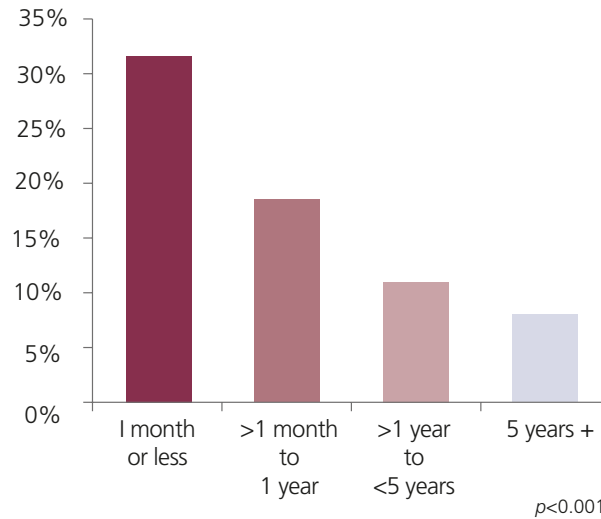
Source: Hughes K et al. (2018) Sources of resilience and their moderating relationships with harms from adverse childhood experiences. Cardiff: Public Health Wales.

One WBA[71] has looked at local and national income level projections. Blaenau Gwent average gross weekly pay is below Wales average (£408.90 and £492.40 in 2016 respectively), and based on recent trends, people who work in the area should see an increase in weekly pay by 2020 (to £470), as will workers in general throughout Wales (to £570) (Figure 9).

Figure 9: Average gross weekly pay for people who work in Blaenau Gwent and Wales (projected)
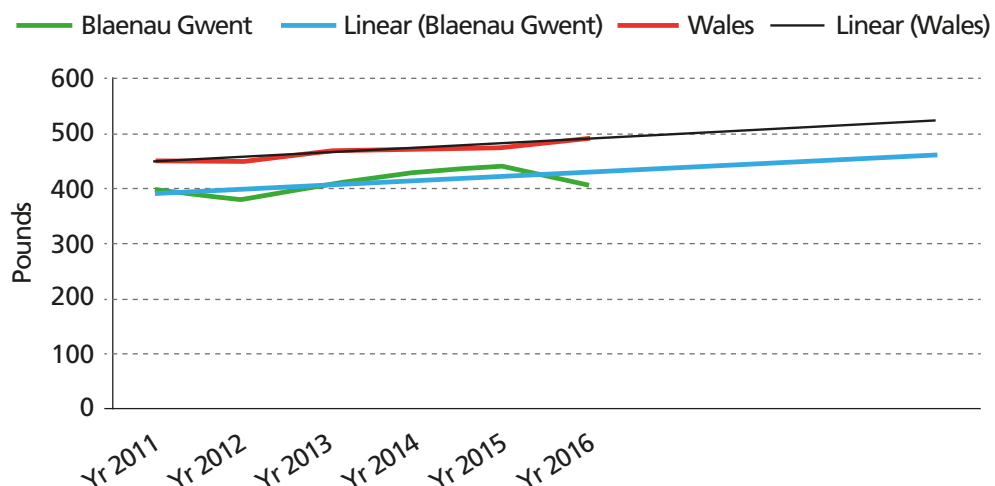
Source: ONS, cited in Blaenau Gwent PSB Well-being Assessment (2017), p131.

Community views

Residents in **Anglesey** and **Gwynedd** stated that one of the most important issues for them was the need for jobs and especially high quality jobs[72].

A **Caerphilly** community scenario building event identified that when looking to the future, residents believed that "*jobs, skills, employment and education will be underpinned by technology to a far greater extent, and the public and private sector will need to be responsive to this rapidly changing environment. Changing work patterns will also feature prominently, with agile and flexible working becoming the norm. Welfare benefit changes are likely to increase the prosperity inequalities in society*"[73].

A **Neath Port Talbot** survey of residents regarding economic well-being found that[74]:

- One in ten survey respondents mentioned 'stress' or 'worry' when discussing economic well-being. Individuals at a workshop viewed debt and money worries as being an aspect of economic and financial well-being.

- The two most important factors identified as contributing towards achieving economic well-being were having a job (51% of respondents) and a good standard of living (26% of respondents).

- When asked to identify what would improve their economic well-being, 36% of survey respondents said a pay increase. Other comments referred to reductions in living costs e.g. "*Affordable living. Less bills to pay*" (survey response).

- For those without a job, economic well-being was seen as hard to achieve, because of a disability, or through having to care for children. Childcare costs were seen to neutralise any increases in income that might be achieved through choosing employment over claiming benefits.

- Residents mentioned the trade-off between the number of hours they could work and the negative impact it had on the benefits they could claim. There were also fears about the prevalence of zero hour contracts which provided limited job security.

Focusing on Place

Many PSBs consider future prosperity in their local areas, for example identifying opportunities and risks for city and town centres. One such PSB area (Wrexham) has developed a vision for the town centre focusing of retail, leisure and environment[75]. Several PSBs also comment on developments in specific parts on Wales, such as the Cardiff Capital Region City Deal[76,77,78,79,80,81] and the Swansea Bay City Deal[82,83,84].

Local case study: Torfaen

All Around Us: The Pontypool Deep Place Study looks at Pontypool transitioning towards a more sustainable community by 2035[85] and advocates developing sectors within the foundational economy such as food, energy and energy conservation, care, the environment, as well as supporting existing economic activity. This will help ensure communities and local economies are more resilient against external shocks and safeguard the environment for future generations[86].

A resilient Wales
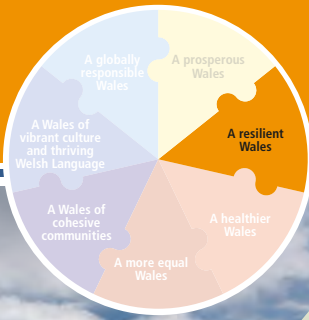
"A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change)."

Key messages

- In Wales, by the 2050s, it is estimated average summer temperatures will increase by 1.0-4.6°C, average winter precipitation will increase by 14% and average summer precipitation will decrease by 17%.

- In Wales, climate change poses risks within the next two generations including from flooding; drought (with consequences for agriculture, farming and food production); and damage to ecosystems and biodiversity.

- Public health effects of climate change include the emergence of new diseases, more heat related deaths and fewer cold related deaths.

- Between 2004 and the 2080s, the cost of damages from flooding in Wales is estimated to rise from £70 million to £1,235 million annually.

Effects of climate change

'Nearly 80% of the total land area of Wales is used for agriculture, while around 30% has recognition or protection for its environmental value. These features give Wales its unique character and define the nature of its exposure to weather and climate impacts.'

Caerphilly Well-being Assessment (2017)[87]

Almost all WBAs identify the significant part that climate change will play in the future. In Wales, by 2040, global warming is likely to result in[88]:

- Hotter, drier summers
- Warmer, wetter winters
- Lower groundwater levels
- Less snowfall and frost
- More frequent extreme weather events e.g. droughts, heat-waves, storms, gales, intense rainfall events.

Average annual temperatures in Wales have already increased from 8.69°C (1910-1939) to 9.22°C (1984-2013)[89].

By the 2050s, summer mean temperatures in Wales are projected to increase by between 1.0 and 4.6°C[90]. It is estimated that by the 2050s, there will be a 14% increase (range 2% to 30% increase) in mean winter precipitation and a 17% decrease (range 36% decrease to 6% increase) in mean summer precipitation in Wales[91].

Projections for Cardiff to 2041-60 provide a similar picture (Figures 10 and 11).

Figure 10: Projected daily summer maximum surface temperature (°C) in Cardiff, 1961-1990 observed and 2041-2060 projected
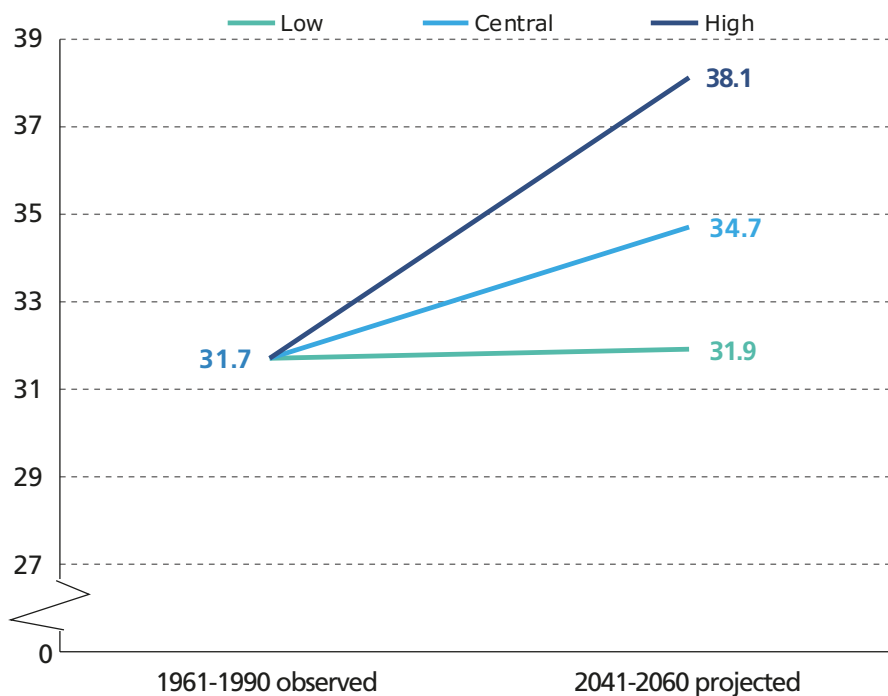
Source: Public Health Wales Observatory, using data from Brown et al. (2014), CCRA2 Evidence Report, via ASC (2016) UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Wales[v].

v   Axes do not start at 0. Data is only available for Cardiff and caution must be used in generalising these projections to the whole of Wales.

Figure 11: Projected 5 day cumulative winter rainfall accumulation (mm) in Cardiff, 1961-1990 observed and 2041-2060 projected
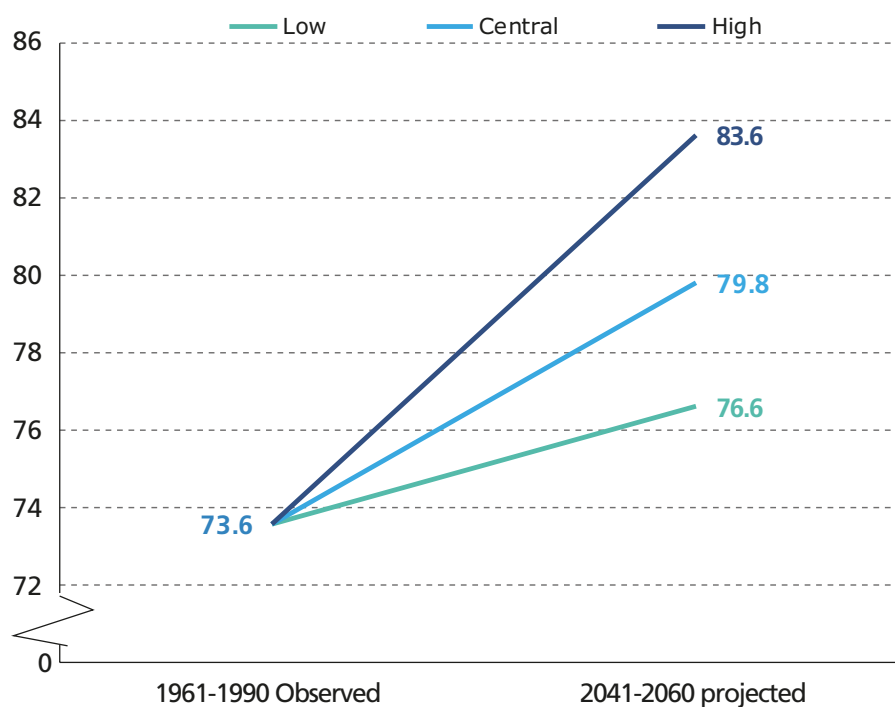
Source: Public Health Wales Observatory, using data from Brown et al. (2014), CCRA2 Evidence Report, via ASC (2016) UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Wales[v].

In Wales, without adaptation beyond current plans, within the next two generations climate change poses a number of risks[92,93]:

- Flooding and coastal erosion impacting on businesses, communities and infrastructure e.g. roads, rail, electricity transmission and access to clean water.

- Drought, with consequences for public water supplies; damage to biodiversity; threats to agriculture and farming (and therefore food production) and other industry and trade; damage to infrastructure such as energy generation; and increased risk of wildfire.

- Damage to ecosystems and biodiversity.

- Adverse impacts on other aspects of public health such as new and emerging diseases; exacerbations of respiratory conditions due to increases in ground level ozone during the summer[94]; increased costs of fruit and vegetables[95].

Climate change also offers opportunities, such as warmer winters lowering the cost of heating homes, with a subsequent decrease in fuel poverty levels. Warmer summers might see an increase in tourism and outdoor activities[96], improve crop yields and boost livestock farming[97].

Specific health implications of climate change are likely to include an increase in heat related deaths and a decrease in cold related deaths (Figures 12 and 13). Such health implications are more likely to affect vulnerable groups such as the elderly.

Figure 12: Heat-related deaths, crude rate per 100,000, all persons, all ages, 2000-2080
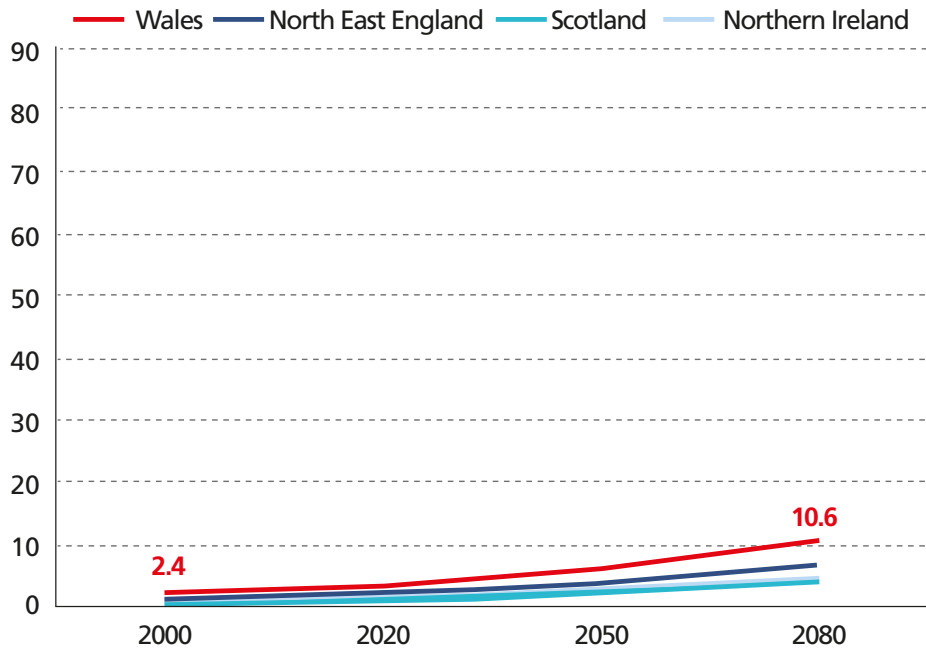
Figure 13: Cold-related deaths, crude rate per 100,000, all persons, all ages, 2000-2080
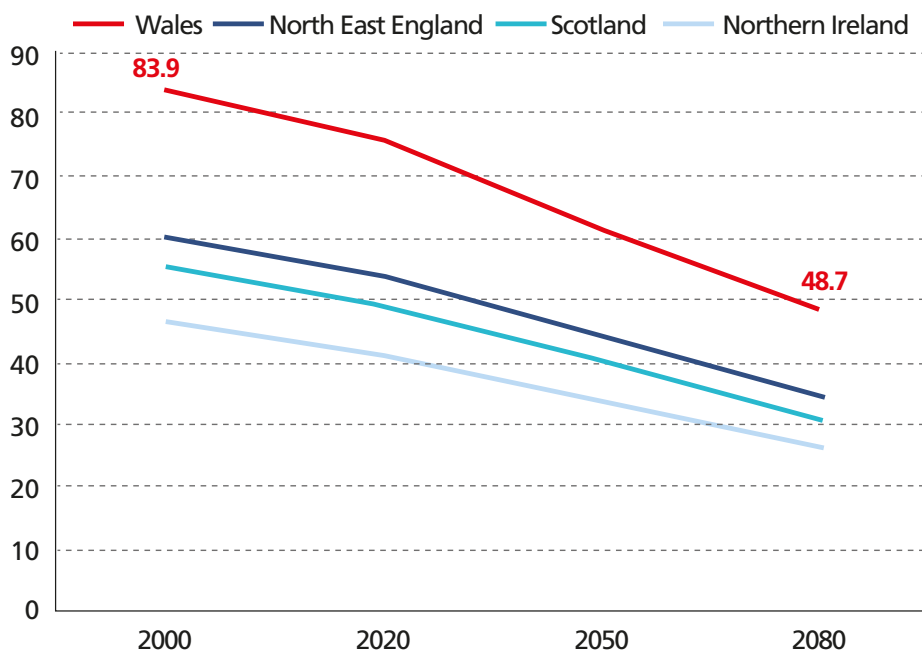
Source Figure 12 & Figure 13: Public Health Wales Observatory, using data from the Health Protection Agency[vi]

Future Scenario

At a Future Scenario event in **Caerphilly**, participants felt that *'the future focus should be on energy security and fostering the development and use of green energy. Concerns were raised around global food and water security and climate change. Biodiversity was a topical issue with concerns expressed around the need to halt the decline in pollinator species, particularly insects'*[98].

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vi   The projected heat and cold-related death rates do not take into account changes from the baseline of the relative risks, temperature thresholds and baseline mortality rates for each region. They do reflect a pattern of increasing mean daily temperature and the increasing size of the regions' populations.

Increased flooding risk

Nearly all (17) WBAs raise concerns regarding the increased risk of flooding, highlighting the affects to homes and businesses, and disruption to whole communities[99].

As well as financial consequences, there can be prolonged physical and mental well-being impacts for affected individuals, even well after the event. Floods may also cause significant disruption to healthcare provision[100].

Often the worst affected by flooding are the more vulnerable in society[101].

For businesses, flooding not only causes damage to premises, it also impacts on supply chains and support services. Increased insurance policy payouts could impact on the financial sector; there may be difficulties obtaining flood insurance and mortgages for some properties. Flooding also threatens key infrastructure such as transport and energy[102]. It is estimated that between 2004 and the 2080s, the cost of damages from flooding in Wales will increase 18 fold from £70 million to £1,235 million annually (under the most likely scenario)[103,104].

Access to green space

Being connected to nature and the natural environment brings benefits for a variety of reasons including access to leisure and recreation, education or from having a sense of place[105]. Nearly 90% of Welsh children feel disconnected with nature (higher than the rest of the UK) and a quarter never play outside[106].

Community views

'Your Newport Survey 2016'[107] (662 responses):

Newport residents' responses to the question *"What do you think your community would like to see more / less of in the next 20 years?"* include:

"I love its open and wooded green areas."

"More green areas with parks for children on new housing estates."

Residents value Newport's green space, with nearly a quarter mentioning open space. Looking to the future, residents want better maintained or more green spaces, with access to cycle paths and play areas for children.

Poor air quality

In Europe, poor air quality is estimated to be one of the leading causes of the environmental burden of disease[108]. Outdoor air pollution is a bigger cause of mortality than road traffic crashes, environmental tobacco smoke or climate change[109]. Children, the elderly and those with pre-existing conditions are the most susceptible.

In the UK 40,000 additional deaths per year are attributable to poor air quality with a health cost of £20 billion per annum[110,111,112].

It is estimated that each year, in Wales, 1,320 deaths can be attributed to exposure of fine particulate matter ($PM_{2.5}$) and 1,100 deaths to exposure of nitrogen dioxide (NO_2)[42]. In addition, short-term exposure to $PM_{2.5}$ is known to cause exacerbation of asthma, whilst long-term exposure results in an increased risk of heart disease, stroke and lung cancer [113] . NO_2 exposure is known to increase morbidity and mortality, with short term exposure associated with higher rates of cardiovascular and respiratory disease [114] .

Public bodies at local, regional, national and international levels need to act to reduce exposure to

air pollution, with multi-sectoral approaches to preventing and reducing emissions as part of long term strategies and policies[113].

Wales' air quality management framework[115] consists of national level action (policies such as emissions standards setting, legislation) and local action (Local Air Quality Management regime implementation, with Air Quality Management Areas being declared if Air Quality Objectives are (or are likely to be) breached). In their WBAs, Caerphilly[116], Newport[117] and Neath Port Talbot[118] make reference to Air Quality Management Areas and approaches to delivering tangible air quality improvements including through road infrastructure changes, improving volume and flow of traffic, and supporting the use of less polluting forms of transport, with a focus on active travel.

A healthier Wales
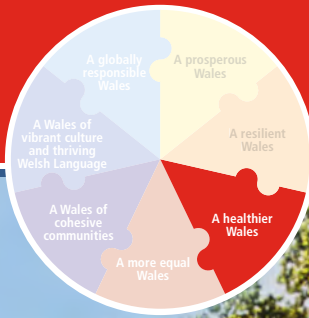
"A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood."

Key messages

- By 2025, with current efforts, smoking rates in Wales are likely to fall to 15%.

- The proportion of adults who are overweight or obese in Wales is projected to increase from 58.3% (2013-15) to 62.2% (2025).

- Projections for Wales show that between 2017 and 2035 there will be an increase in the number of adults with chronic conditions, including diabetes (from 186,365 to 220,376), heart conditions (from 253,406 to 321,986) and stroke (from 69,656 to 90,214).

- By 2035, the number of adults with a common mental health disorder will increase from 417,121 in 2017 to 447,159.

- The number of people aged over 65 years living with dementia in Wales is estimated to increase from 44,275 in 2017 to 72,769 in 2035.

Public Health indicators

Some PSBs make use of available Well-being of Future Generations Act projections produced by Public Health Wales Observatory[119].

Smoking

Three PSBS (Newport, Vale of Glamorgan and Torfaen) include projections data about smoking prevalence. This data shows that with current efforts, adult smoking rates are likely to fall in Wales to 15% by 2025 (Figure 14). However, international evidence from Australia and parts of the US suggests that a further reduction in smoking rates is achievable[120].

Figure 14: Estimated percentage of adults in Wales who self-report to be current smokers, observed 2003/04-2005/06 to 2013-15 and projected 2016 to 2025. Wales[vii]
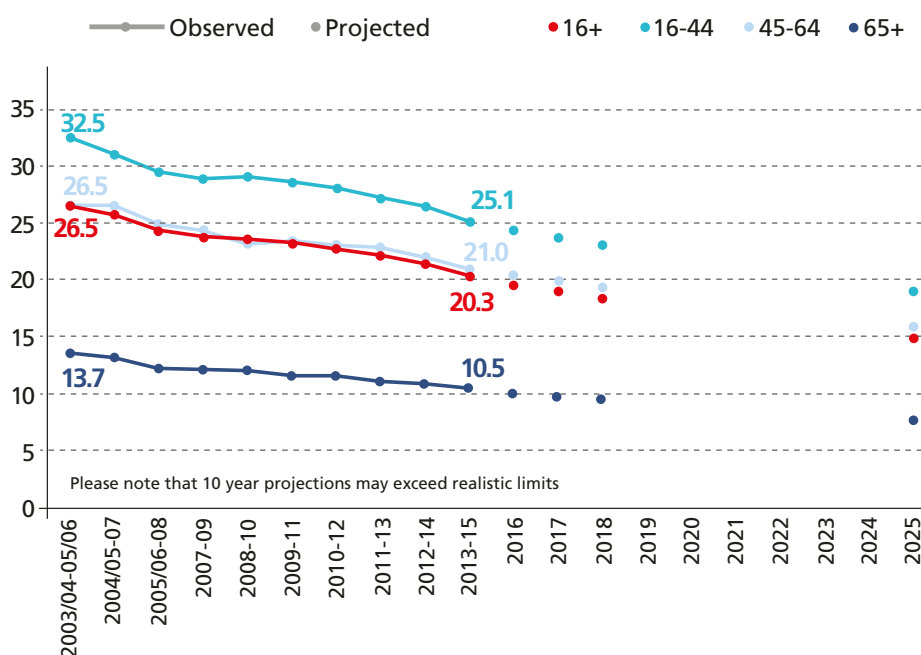
Source: Public Health Wales Observatory, using WHS (WG) & population projections (ONS)

Electronic Nicotine Delivery Systems (electronic cigarettes)

PSBs identify concerns around the use of electronic cigarettes but do not proffer future predictions on the issue. PSBs raise concern regarding the confusion amongst young people about e-cigarette harm[121] and the unknown future health impacts[122]. Recent research involving 7 to 11 year olds in Wales has identified that almost all children participating in the study have an awareness of electronic cigarettes although there is limited understanding of health harms and uncertainty about current legislation[123].

Obesity and fruit and vegetable consumption

The proportion of adults that report not meeting guidelines for fruit and vegetable consumption in Wales is projected to increase from 67.7% in 2013-15 to 74.3% in 2025 (Figure 15). PSBs across Wales express concern at the rising levels of adults and children who are overweight or obese, with one highlighting that the increase in adult overweight and obesity rates is despite years of active healthy lifestyle promotion[124].

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vii   An extrapolated projection method uses historical trends and cycles to extrapolate to the future. The extrapolation method assumes that past patterns will continue into the future. While this is often a valid assumption in the short term, the further we attempt to forecast, the less certain we become of the forecast.

Figure 15: Estimated percentage of adults in Wales who reported selected lifestyle factors, observed 2003/04-2015 and projected 2016-2025.

*Fruit & veg consumption observed data available from 2008-2010
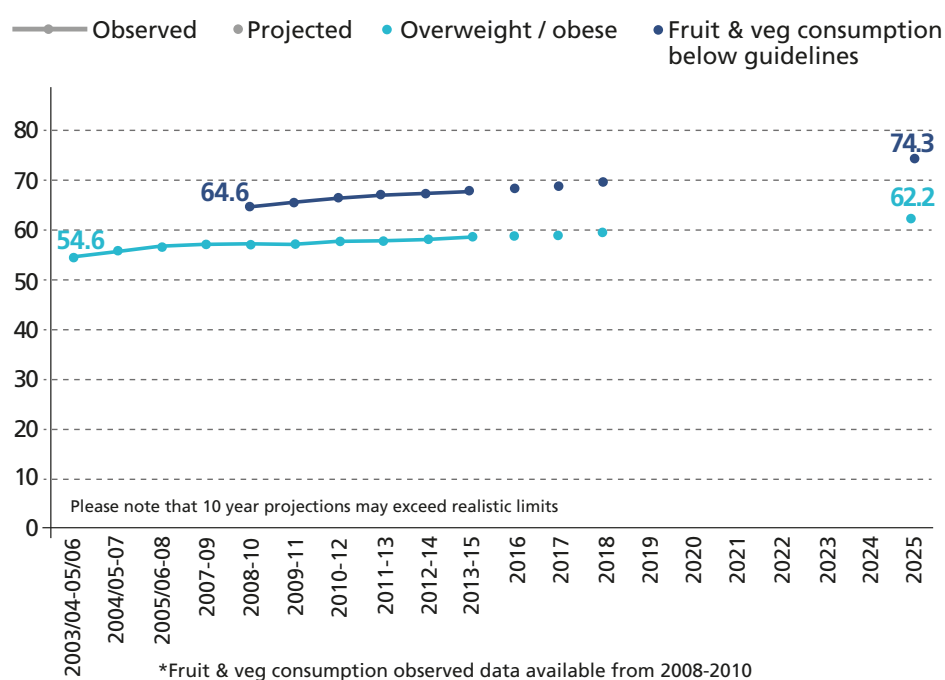
Source: Public Health Wales Observatory, using WHS (WG) & population projections (ONS)

Many PSBs comment on the potential implications of rising obesity levels, including a rise in chronic health problems (with subsequent impact on healthy life expectancy); increased health inequalities[125]; and impacts on the sustainability of public services in the future[126].

Childhood obesity

According to Daffodil[viii] (Institute of Public Care), the number of children in Wales aged 2 – 17 years who are obese is projected to decrease slightly from 104,015 children in 2017 to 103,746 children in 2035[127]. Some PSBs have used the Daffodil system to project future levels of childhood obesity in their areas. For example, childhood obesity rates are set to increase in Carmarthenshire, with males aged 2 to 15 years being at greatest risk[128], whereas in Newport, the proportion of 4 to 5 year olds who are overweight or obese is likely to remain relatively stable in future[129].

Low birth weight

By 2025, it is projected that the proportion of babies born with low birth weight across Wales will fall from 5.2% (2013-15) to 4.6%.

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viii   Daffodil has been developed by the Institute of Public Care for the Welsh Government and collates information to support care services planning for the future. Projections on a range of issues are developed through applying Wales level prevalence figures to projected population estimates, without taking past trends into account.

Mental health and dementia

Daffodil projection data for Wales indicates that the number of adults with a common mental health disorder will increase from 417,121 in 2017 to 447,159 in 2035[130]. A few PSBs[131,132,133,134] identify similar trends for their local areas with some identifying specific issues including:

- The link between poor mental health and low emotional resilience in young people entering the criminal justice system, and a failure to tackle these issues resulting in an ongoing cycle of criminality[135].

- Welfare reforms may have negative effects on claimants' well-being, placing increased demands on services providing support e.g. social, health and housing services[136].

Children's mental health

Though not widely discussed, some PSBs predict that the number of children with mental health problems and behavioural issues is set to increase in their local area[137,138]. Projection data for Wales indicates that the number of children (aged 5-15 years) with mental health problems will increase from 35,807 in 2017 to 36,761 in 2035[139].

One PSB identifies the long term impacts of early life experiences such as bullying or abuse and the benefits of improving mental health in early life (as well as for adults and older people) such as reducing inequalities, reducing health-risk behaviours and improving physical health, economic productivity, social functioning and quality of life, with benefits being seen across generations[140]. Resilience is seen to be pivotal to tackling potential intergenerational issues such as domestic abuse, poor parenting and bullying[141].

Dementia

In 2017, there were estimated to be 44,275 people aged over 65 years living with dementia in Wales and by 2035, this could increase to 72,769[142].

Figure 16: Persons predicted to have dementia by age group, counts, all persons aged 65+, Wales, projected to 2035[ix]
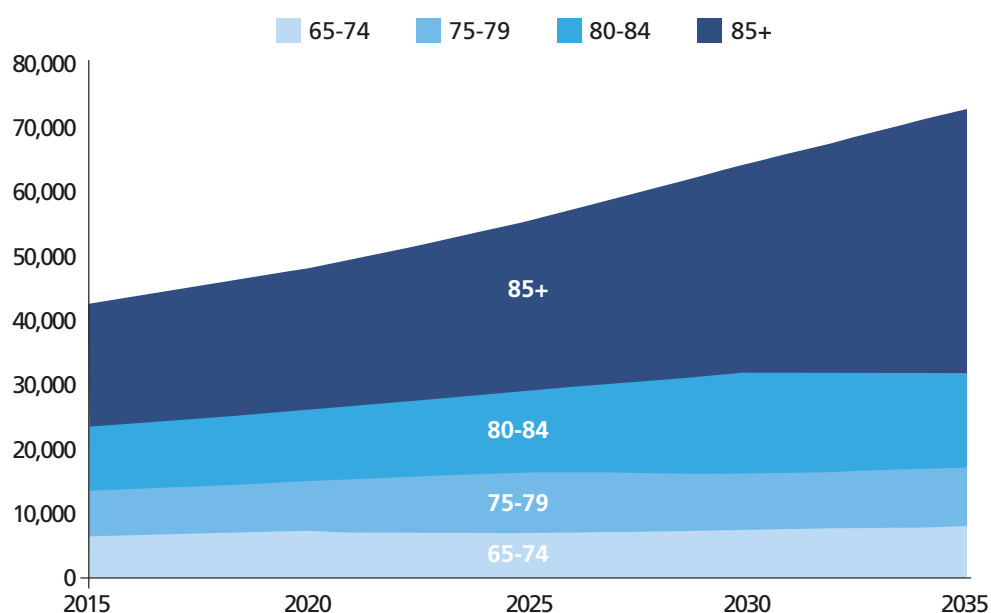
Source: Public Health Wales Observatory, using Daffodil (Institute of Public Care)

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ix   The projected prevalence changes of the Daffodil projections do not take account of any existing temporal trends in prevalence. They represent the effects of anticipated population demographics only on prevalence at a point in time.

The prevalence of early onset dementia (before the age of 65 years) is less than 1%, with predicted numbers to 2035 being relatively stable[143,144]. Whilst dementia prevalence is slightly lower in men than women, a predicted rise in male life expectancy is anticipated to result in the number of men with dementia increasing at a faster rate[145].

Potential future challenges for Wales include the need to manage dementia in rural communities and to address the needs of Welsh speakers, particularly those individuals who are only able to communicate in Welsh as their illness progresses[146].

Other issues that have been highlighted include:

● Women are more likely to care for others with dementia, and are more than twice as likely than men to provide intensive care and support[147].

● Innovations such as 'dementia-friendly' towns could help improve the quality of life of those with the disease, as well as support carers[148].

Non communicable diseases

The number of adults over 18 years with a limiting long-term illness is expected to increase from 419,764 in 2017 to 501,084 in 2035[149], with an associated increased demand for health and care services.

Figure 17: Percentage change in persons predicted to have selected health conditions in Wales, all persons aged 18+, 2015-2035[vii]

*Persons aged 25 and over
†Persons aged 16 and over
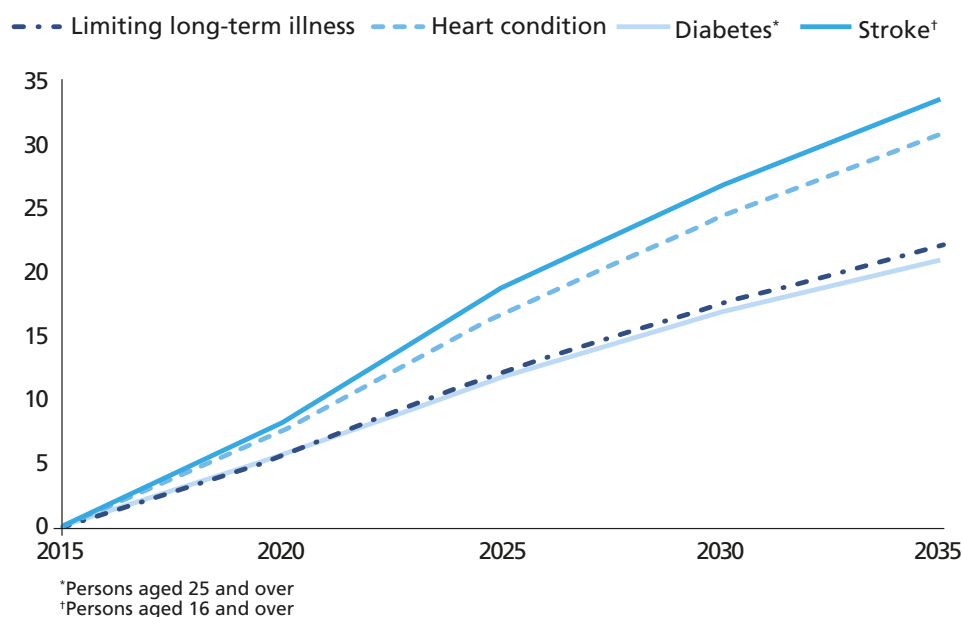
Source: Public Health Wales Observatory, using Daffodil (Institute of Public Care)

Table 1 provides an overview of projection data for a range of non-communicable diseases and conditions in Wales, and shows that these are all likely to increase by 2035.

Table 1: Projections for non-communicable disease and conditions in Wales, 2017 to 2035[vii]

Indicator	2017	2035 projection
People aged 18 and over predicted to have any heart condition (excluding high blood pressure)	253,406	321,986
People aged 16 and over predicted to have received treatment for a stroke	69,656	90,214
People aged 18 and over predicted new cancer cases	19,810	25,069
People aged 45 and over predicted to have a longstanding health condition caused by chronic obstructive pulmonary disease	15,838	19,080
People aged 75 and over predicted to have registerable eye conditions	18,763	29,563
People aged 18 and over predicted to have a moderate or severe hearing impairment	345,607	475,527

Source: Daffodil. Institute of Public Care.

Diabetes

The growing burden of type 2 diabetes is due to a range of factors including obesity, sedentary lifestyles, dietary trends and an ageing population. Projections for Wales show that the number of adults aged over 25 years with diabetes will increase from 186,365 in 2017 to 220,376 in 2035[150].

Diabetes is an important issue for the health service, and two WBAs have included local projections for the disease[151]. Figure 18 provides an example of diabetes projections developed by the Gwent local area.

Local example: Gwent

Figure 18: Projected prevalence of Type 2 Diabetes by Local Authority Area, 2010-2030
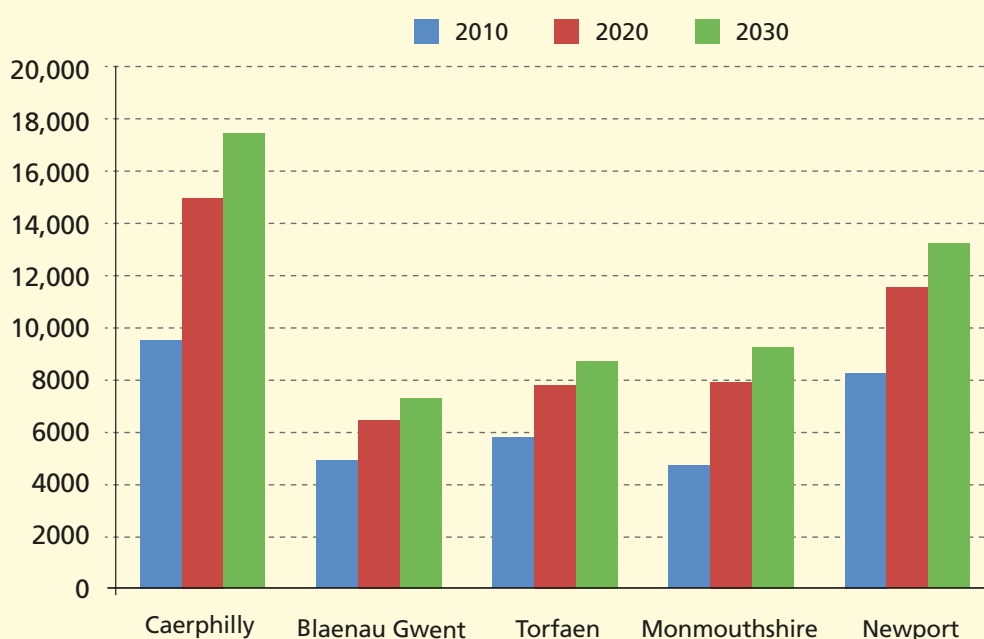
Source: Public Health England, 2013 using Association of Public Health Observatories (APHO) Diabetes Prevalence Model, 2010

Health Protection threats

Emerging future threats identified by PSBs include pandemics (the global spread of a new disease) in an increasingly interconnected world; the growing danger of antimicrobial resistance[152,153]; and the possible public health impacts of climate change and extreme weather events[154]. Referring to the potential impacts on business continuity if one of these threats becoming a reality, Flintshire PSB adds:

'A failure to develop and test (business continuity) plans could lead to a greater mortality and distress, and have a wide ranging impact on many other vital services on which people depend.'[155]

Future challenges for the health system

It is anticipated that Welsh NHS spending will need to rise by 3.2% a year in real terms as a result of demographic changes, cost pressures and an increase in the prevalence of chronic diseases, unless there is action to reduce pressures or increase efficiency. This would mean that spending would increase from £6.5bn in 2015/16 to £10.4bn in 2030/31 (in 2016/17 prices)[156]. Figure 19 provides spending projections for dif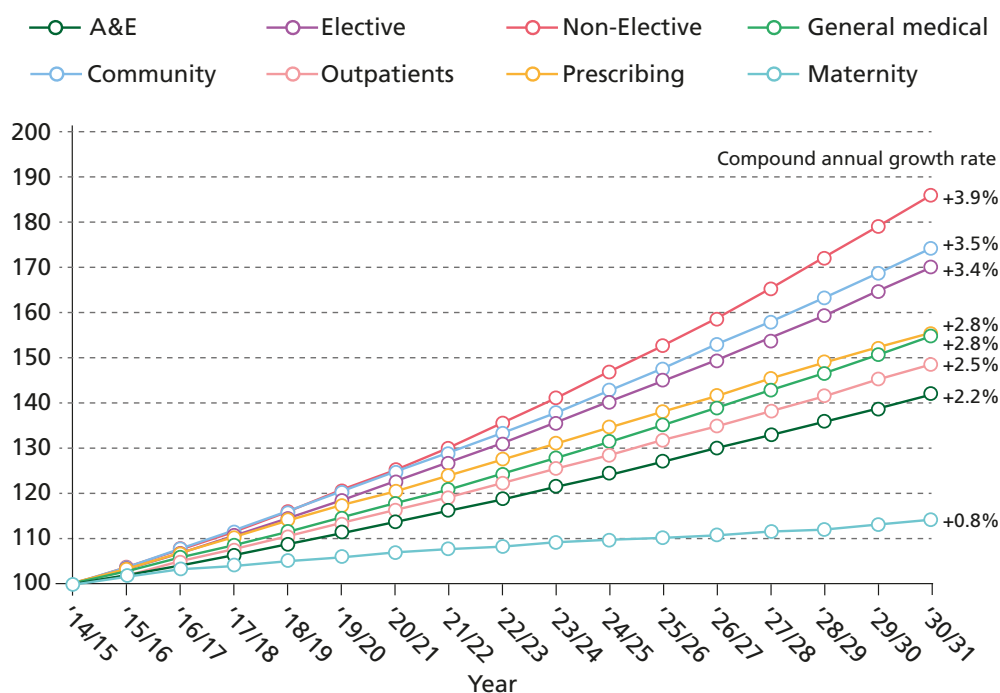ferent treatment areas for the NHS in Wales. Spend will increase for all services, with the largest growth likely to be in non-elective admissions, mainly due to the increase in the older population.

Figure 19: Index of spending projections for individual treatment areas, as a result of rising activity and unit costs (2015/16=100)

Source: The path to sustainability: Funding projections for the NHS in Wales to 2030/31. The Health Foundation, 2016.

PSBs note significant workforce challenges to the health system delivering better care including an ageing workforce, providing a seven day service, skills shortages and recruitment issues and increasing demands on the health system[157].

Several PSBs speculate that over the next five to ten years, these challenges, along with rising demand, stretched resources and structural reforms are likely to lead to increasingly joined up health and social care services and expanded or new job roles to bridge the gap between the traditional health and social care professions[158,159].

Social care and support needs

An ageing population brings benefits to society, whilst also placing greater demands on services due to increased care and support needs[160]. For example, by 2035, the number of people aged 65 and over receiving residential based services is expected to almost double[161].

Increasing care needs of an ageing population mean that by 2034, 11% of over 65s in the Carmarthenshire area will need care[162].

Compared with the NHS, pressures on adult social care services are estimated to rise at a faster rate (4.1% a year between 2015 and 2030/31) due to demographic changes, increasing costs and a greater number of people with chronic conditions. This will mean that the social care budget will need to nearly double to £2.3bn over the same period[151].

Unpaid adult carers

An ageing population is likely to be accompanied by an increase in the number of unpaid carers. Supporting carers e.g. through respite care and other services, is important for reducing the pressure on health and social care services[163]. The future provision of unpaid care is likely to be influenced by factors such as social care support, long-term trends in health and well-being, housing policy, later retirement ages and friendship and family networks and structures[164].

By 2037, there will be an estimated 40% rise in the number of carers needed across the UK. This equates to an additional 2.6 million carers, increasing the total carer population to 9 million[165].

Local areas have noted an increase in the number of unpaid carers including an increasing reliance on older carers[166] – who may have age related well-being needs of their own. For example, between 2011 and 2035:

- There will be an 8.4% increase in the number of people providing 50+ hours of unpaid care in Conwy County Borough, 16.4% increase in Denbighshire and 15.2% in Flintshire[167,168] .

- There is expected to be a significant rise in carers aged over 65 years - 35.3% in Conwy County Borough, 45.0% in Denbighshire and 55.2% in Flintshire[169,170].

Young carers

Swansea predicts that the number of young carers is expected to remain stable between 2015 and 2035 in the local area[171]. Powys identifies a range of issues facing young carers in the future such as negative impacts on school attainment and opportunities for respite in the short-term; difficulties accessing employment in the medium-term; and the need to juggle caring responsibilities around employment and family life in the long-term[172].

Adverse Childhood Experiences

A number of PSBs[173, 174,175,176,177] stress the importance of interventions, such as evidence-based early years prevention and intervention, to tackle Adverse Childhood Experiences (traumatic experiences that occur before the age of 18 and are remembered throughout adulthood) to improve the well-being of current and future generations, though no projections have been identified on the issue.

A more equal Wales
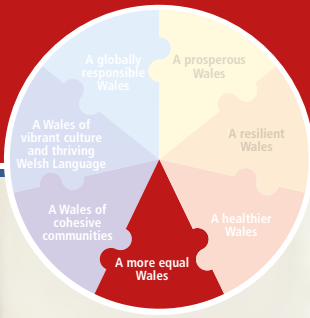
"A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio economic background and circumstances)."

Key messages

- By 2024, the gap in healthy life expectancy between the most and least deprived fifth of the Welsh population is expected to be 12.7 years for females and 11.4 years for males.
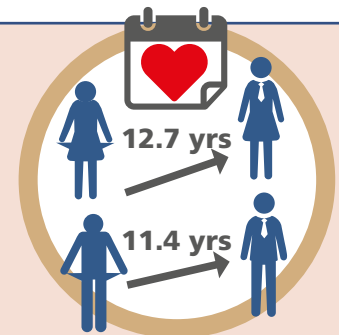
- Between 2014-15 and 2021-22 relative poverty in the UK is projected to increase from 21.3% to 23.6%, with relative child poverty increasing from 29% to 35.7%.

- Welfare reform may remove £1 billion from the Welsh economy by 2025, equivalent to £550 a year per adult of working age.

- By 2019, the annual household food bill is predicted to increase by £350.

Persistent health inequalities

Many PSBs express strong concerns about health inequalities either remaining unaltered or widening in the future[178,179]. This is illustrated in the continued gap in healthy life expectancy in Wales.

Table 2: Healthy Life Expectancy at birth (years), observed 2010-2014 and projected 2024, Wales

		2010-2014	2024
Females	Least deprived	73.8	76.0
	Most deprived	61.7	63.3
Males	Least deprived	72.1	75.4
	Most deprived	60.8	64.0

Source: Public Health Wales Observatory, using WHS & WIMD (WG), MYE & PHM (ONS)

Using a scenario based approach, Powys identifies that without significant social policy change (at both the macro and micro level), inequalities are unlikely to change in the long-term[180].

Income and poverty

The impact of changes to the wider economy on income and poverty levels is challenging to predict[181]. The *Future Trends Report 2017* notes that income inequality in the UK has been stable or fallen since the 1980s, although a small proportion of those with highest incomes have "pulled away" from others. Income inequality is likely to deteriorate as a result of welfare reforms[182].

Those already most disadvantaged by low income will face increasing challenges such as rising costs, resulting in difficulties in making ends meet[183]. For example, the Centre for Economics and Business Research forecasts that the annual household food bill will increase by £350 by 2019[184].

Pensioner poverty is reducing, although there is concern voiced in WBAs about the growing issue of working-age poverty and resurgence in child poverty[185]. Institute for Fiscal Studies projections for the UK[186] estimate that between 2014-15 and 2021-22:

- relative poverty will increase from 21.3% to 23.6%
- relative child poverty will increase from 29% to 36%
- absolute poverty will fall from 20.3% to 19.8%
- absolute child poverty will increase from 27.5% to 30.3%
- absolute poverty for pensioners will fall from 12.8% to 10.9%.

Impact of welfare reform

Income inequality is expected to increase as a result of welfare reform. *Wales Public Services 2025*[187] estimates that welfare reform may remove £1 billion from the Welsh economy, equivalent to £550 a year per adult of working age, substantially more than the British average (£470)[188]. Welfare reform changes are affecting those already in greatest poverty, for example families with children. Poverty levels are likely to be exacerbated by other changes such as Universal Credit introduction and reduced benefit caps and tax credit entitlements. PSBs are concerned that Disability Living Allowance for disabled children may be used to pay for food, heating or rent[189].

Household savings and debt

Household savings impact on families' abilities to cope with unexpected bills, and could make the difference between coping and not coping financially[190]. Even a relatively small increase in interest rate positions could potentially double the number of households encountering repayment problems in one form or another[191].

A Wales of cohesive communities
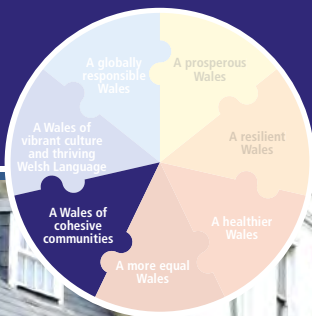
"Attractive, viable, safe and well-connected communities."

Key messages

- Approximately one in four adults living in the most deprived fifth of Wales report feeling lonely compared with one in eight adults living in the least deprived fifth of Wales. Some groups, such as lone pensioner households, are vulnerable to social isolation and this situation is likely to worsen in the next twenty years.

- By 2020, social landlords will be required to improve housing stock to meet the Welsh Housing Quality Standard.

- Within the next 10 years, all Welsh households are predicted to have access to the internet, if the current rate of growth continues. However, some groups, such as isolated older people, could become increasingly excluded.
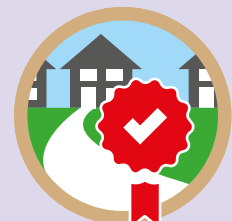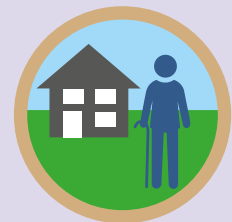
Affordable housing and housing quality

Lack of affordable housing

PSBs note that the relative affordability of housing has decreased[192] and that lower wages in some areas means that affordability is a major concern[193]. Cardiff highlights that average house costs in the city are approximately eight times the average salary, and that of the UK's core cities, only in Bristol is housing less affordable. Cardiff also links the issue of reduced housing affordability with a decrease in living standards, adverse impacts on mental well-being and intergenerational inequalities[194].

Housing quality

There is recognition that poor housing standards contribute to preventable diseases such as respiratory and cardiovascular disease, poor mental well-being and injury, with subsequent costs to the health service. Cold homes also contribute to excess winter deaths[195]. Older housing stock in some parts of Wales is noted to be more likely to be unfit for habitation[196]. Social landlords have been set a target by Welsh Government to improve housing stock to meet the Welsh Housing Quality Standard by 2020[197].

Community views: Anglesey and Gwynedd

People responding to engagement events in Anglesey and Gwynedd have linked community cohesion to the lack of affordable housing in the area. Many have commented that young people leave an area due to high house prices, with residents bringing attention to the negative impact of the loss of the younger generation on communities. Family, friends and neighbours are identified as being important to well-being[198,199].

Isolation and loneliness

It is estimated that social isolation and loneliness have a similar health impact as smoking 15 cigarettes a day[200].

One in four (24%) adults living in the most deprived fifth of Wales report feeling lonely compared with one in eight (12%) adults living in the least deprived fifth of Wales[15]. Moreover, high levels of social isolation are being reported by an increasing number of people, according to the Welsh Local Government Association[201]. Some groups, such as lone pensioner households, carers and people suffering poor mental health, are especially vulnerable to social isolation; this situation is likely to worsen in the next twenty years[202,203]. A number of WBAs highlight that the issues may be particularly acute in rural areas[204,205]. Loneliness also affects children and young people, with Childline providing 4,063 counselling sessions about loneliness in 2016/17 [206] .

Community cohesion and well-being

Residents in some areas have identified a healthy community spirit as being important to their well-being[207]. Furthermore, it is recognised that community cohesion must be nurtured in order to create prosperous and safe communities that are strong and resilient enough to face future challenges[208]. One PSB suggests that community cohesion is seen more frequently in areas where residents have more resources such as in prosperous villages, or where there is a strong tradition of collaboration, for example in traditional valley communities[209]. However, recent evidence shows that the proportion of people reporting a sense of community is lower in the most deprived fifth of Wales (36%) compared with the least deprived fifth (61%)[15].

Digital inclusion

Whilst the rate of digital exclusion is falling (Wales is in a similar position to the rest of the UK[210]), trends suggest that some societal groups could become increasingly marginalised e.g. isolated older people, the disabled and low income households[211,212].

Within the next 10 years, it is predicted that all Welsh households will have access to the internet, if the current rate of growth continues[213]. Welsh residents and businesses will benefit from the 'Superfast Cymru' programme, which will bring fibre broadband throughout the country[214]. One PSB estimates that by 2020 all its citizens will have access to superfast broadband and 50% of citizens and businesses will have access to ultrafast broadband[215].

The future of public services

Predictions for the future, made by PSBs include:

- Public services will increasingly utilise new technologies so that services are available outside of working hours, and accessible via the internet.

- Service delivery through community, mutual or third-sector organisations is likely to become more common, leading to greater innovation as well as more variability in provision.

- Fewer public services will be free at the point of delivery. This is likely to be influenced by the political acceptability of introducing fees and the extent to which general taxation can be increased to maintain services free at the point of delivery[216].

A Wales of vibrant culture and thriving Welsh language

A globally responsible Wales

A prosperous Wales

A Wales of vibrant culture and thriving Welsh Language

A resilient Wales

A Wales of cohesive communities

A healthier Wales

A more equal Wales
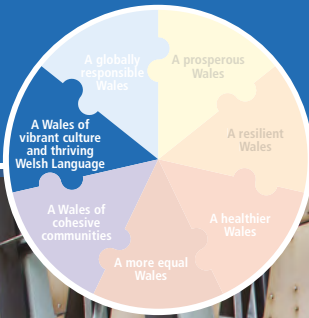
"A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation."

Key messages

- There is an estimated loss of between 1,200 and 2,200 fluent Welsh speakers each year.

- There is concern that the Welsh language is at risk of being lost to future generations, despite an increasing number of children and young people speaking Welsh.

- It is anticipated that community running or ownership of venues and services will have a positive effect on cultural participation.

- Costs associated with accessing cultural and sporting activities are likely to negatively affect deprived areas.

"Cymraeg"

£ £ £

Tocyn Ticket

Welsh language

Approximately one in five people in Wales speak Welsh. However, this is on a background of decline over the last century. It is estimated that there is a loss of between 1,200 and 2,200 fluent Welsh speakers per annum. Any growth in Welsh language speakers since 2001 is mainly due to an increase in Welsh speakers amongst those aged under 20 years[217]. Eight WBAs speculate that based on historic trend data, there will continue to be a decrease in the proportion of their population who will be able to speak Welsh. Strong concerns are expressed in areas where Welsh is currently spoken daily about the Welsh language being at risk of being lost to future generations[218,219,] despite some areas reporting that the greatest proportion of people who can speak Welsh are young people and that the number of children and young people speaking Welsh is increasing[220,221]. Welsh Government has published its strategy [222] *Cymraeg 2050* outlining its ambition to see a million people speaking and using Welsh in every aspect of life by 2050.

Any decline in the Welsh Language in the future will be due to factors including: demographic changes and migration patterns; Welsh language not being spoken in the home; lack of confidence in speaking the language; and marriages between Welsh and non-Welsh speaking individuals[223].

Arts and culture

Perhaps reflecting the difficulty of predicting future developments in arts and culture, WBAs venture very few predictions in this area. North Wales PSBs draw attention to the value of social prescribing and the impact that culture can have on well-being[224,225]. PSBs also highlight the future likelihood of community groups running venues and services, with community ownership having a positive effect on cultural participation. More deprived areas are likely to be negatively affected by costs of accessing cultural and sporting activities and non-commercially viable activities could cease in future[226].

The Arts Council of Wales has published a report highlighting the importance of the Arts for health and well-being[227]. It has proposed an approach based on partnership and collaboration, guided by the Well-being of Future Generations Act, including actions such as developing an Arts and Health Action Plan jointly with the Welsh NHS Confederation, and the arts being a core component of social prescribing schemes.

Participation in sports

A report commissioned by the Sport Wales Advisory Group[228] has looked at the trends that are likely to impact on sport until 2026, so that the sector can anticipate and respond to future demands. The report identifies four possible future scenarios based on whether future policy empowers or inhibits citizens to participate in sport and also the extent to which culture promotes active lifestyles:

- Talk the walk – an empowering policy, but inactive cultural mindset

- Sportopia – an empowering policy and active cultural mindset

- Couch culture – an inhibiting policy and inactive cultural mindset

- Against the odds – an inhibiting policy, but active cultural mindset

The report notes that the likeliest scenario for Wales by 2026 is mid-way between the four scenarios, whereby policy is neither fully empowering nor inhibiting sport and there is neither a fully active nor inactive cultural attitude towards sports. The report recommends further action to promote and implement empowering policies and change attitudes towards exercise and sports. Of note, in 2017, Welsh Government announced a policy of joint working between Sport Wales, Natural Resources Wales and Public Health Wales[229] to develop a combined set of actions to increase people's physical activity levels.

A globally responsible Wales

A globally responsible Wales

A prosperous Wales

A Wales of vibrant culture and thriving Welsh Language

A resilient Wales

A Wales of cohesive communities

A healthier Wales

A more equal Wales
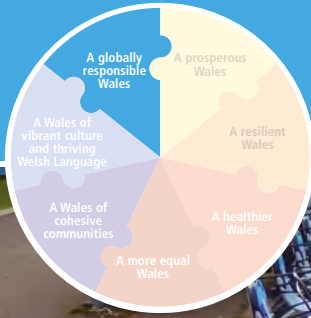
"A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being."

Key messages

- Of all the major British cities, Cardiff is expected to experience the largest increase in demand for gas (44%) and electricity (28%) by 2035.

- By 2020, approximately 80% of fuels will come from overseas.

- By 2021, one PSB area predicts that 67% of electricity consumption and 11% of heat demand could be through renewable sources.

- Welsh Government has an ambition for a carbon neutral Welsh public sector by 2030, and the Environment (Wales) Act 2016 commits Wales to reducing emissions by 80% by 2050.
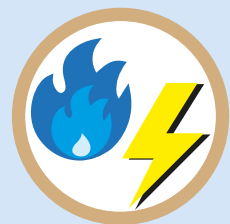
Environmentally sustainable communities

PSBs identify a range of drivers for being environmentally responsible, including climate change, the cost of fossil fuels, government targets on carbon emissions and the need to reduce landfill waste[230]. PSBs predict that improvements in energy efficiency, energy generation and waste management are likely to continue. However, increased community participation in environmental and sustainable practices may not be sufficient to ensure resilience to challenges such as climate change[231].

Sustainable energy

Rising energy demands

Several WBAs predict rising energy demands. Global demand for energy could increase by 53% between 2004 and 2030, with demand for gas likely to increase by 60% by 2040[232]. If current urban expansion of global cities continues, urban energy use will increase threefold between 2005 and 2050[233]. Of all the major British cities, Cardiff is expected to experience the largest increase in demand for gas (44%) and electricity (28%) by 2035[234].

Energy supply

Some PSBs identify concerns about precarious energy supplies to the UK. By 2020, approximately 80% of fuels will come from overseas, with 50% of oil from potentially 'unstable countries'[235,236]. Combined with an ageing energy infrastructure which requires increasing investment, Wales will not be able to take such energy supplies for granted by 2050[237].

Between 2004 and 2015, the proportion of electricity generated in Wales from renewables increased from 2.9% to 20%[238]. Possible opportunities in Wales include the Swansea Bay tidal lagoon development (creating a local marine energy supply along with local expertise[239]); wind power; solar photovoltaics; and energy from waste and energy crops. By 2021, 67% of electricity consumption and 11% of heat demand could be through renewable sources in one PSB area (Torfaen)[240]. However, PSBs note that like other areas of the UK, infrastructural investment and political support is required to make the most of such resources[241].

Whilst there is currently a moratorium on fracking activity in Wales[242], the future of fracking remains uncertain. PSBs have voiced concerns about the impact of fracking on water quality, biodiversity and increased carbon emissions. Monmouthshire has highlighted that parts of the county are earmarked for licensing for fracking as well as for underground coal gasification[243].

Moving to a low carbon society

A low carbon society will support climate change adaptation. Between 1990 and 2014, the Welsh public sector has reduced emissions by 57% through activities such as more efficient fuel use and changing to gas fired heating. More recently, Welsh Government has announced its ambition for a carbon neutral Welsh public sector by 2030 and has introduced legislation (the Environment (Wales) Act 2016), committing Wales to reducing emissions by 80% by 2050. The public sector has been identified as having an important role in reducing its own emissions (it has one of the largest estates in Wales) and a leadership role in influencing others[244]. In 2014, the Welsh public sector accounted for less than 1% of total CO_2e emissions for Wales, compared with 65% for the business sector, 13% for the transport sector, 13% for the agriculture sector, 8% for the residential sector and 2% from waste[245].

Sustainable transport

Good transport improves access to job opportunities and promotes local well-being for citizens[246]. *The Future Trends Report 2017* highlights that there has been a greater increase in traffic in Wales compared with the rest of the UK (except Scotland)[247]. A number of local areas highlight future opportunities such as an upgrade of the Swansea-London mainline[248], the South Wales Metro[249,250], and driverless cars. One PSB (Blaenau Gwent), using traffic forecasts up to 2051[251], identifies that continued unlimited traffic growth is not sustainable, because of environmental consequences and because of the cost of redeveloping road infrastructure to meet demand. Cardiff has an ambition for 50% of journeys to be by sustainable transport by 2021, with a 60% target by 2026[252].

International partnerships

Wales for Africa

Wales has built up over 150 community links with Africa over the past decade, which include 22 health links[253]. The aim of the Wales for Africa programme[254] is to build partnerships to contribute to the UN Sustainable Development Goals, with Welsh Government and citizens acting as active and responsible global citizens, and to further the ambition for Wales to be a globally responsible nation. Activities include promoting placements and twinning, promoting international sustainable development volunteering and promoting fair trade and ethical procurement across sectors in Wales.

Global Citizenship

Global Citizenship refers to '*a sense of belonging to a broader community and common humanity. It emphasises political, economic, social and cultural interdependency and interconnectedness between the local, the national and the global*'[255]. To nurture a culture of Global Citizenship though international collaboration and partnerships and support health professionals, a Global Citizenship training resource has been developed by the International Health Coordination Centre. The aim of the training is to build NHS capacity in engaging internationally, supporting those with an interest in international health partnerships.

World Health Organization Collaborating Centre on Investment for Health and Well-being

The Policy, Research and International Development Directorate, Public Health Wales, has been designated a Collaborating Centre for Investment for Health and Well-being by the World Health Organization. The focus of the Collaborating Centre will be to facilitate investment as a driver for social, economic and environmental sustainability through developing, collating and sharing information and tools. The Centre will have a global reach, as one of a network of more than 700 Collaborating Centres in 80 countries and will work to promote sustainable policies, helping to address the needs of current and future generations.

Key report findings

Part 2:
Developing long-term thinking in Wales

In this section we briefly outline **methods and tools** that can be used to look to the future. **Case studies** demonstrate future thinking in real life situations and learning from a **roundtable meeting** of experts in the futures field is used to identify practical, implementable recommendations for Wales.

Tools and Methods

Our review of WBAs has highlighted that local areas are using a range of approaches when considering the future. However, there is considerable variation in the use of quantitative evidence (even when available) e.g. from modelling, trends or projections; and variation in qualitative intelligence gathered through discussions with communities and stakeholders. Methods or tools available to support long-term thinking are used infrequently.

"Futurists" i.e. those that study the future often call upon a variety of tools and methods, which can be qualitative, quantitative or semi-quantitative[256]. Some methods are distinct to futures studies, whilst others are borrowed from different disciplines including science, social sciences and the humanities[257]. Many of the tools and methods used under the umbrella of 'futures work' will be familiar to non-specialists, and, in some cases used on a routine basis.

Futures work is more effective when a number of tools are used in combination; a single tool has the potential to be too restrictive and only allows one aspect of a problem to be explored[258]. For example, tools can be used to support different aspects of policy formulation including helping to build consensus about issues and how to tackle these; identifying possible future trade-offs for policy choices; developing more resilient policies and strategies; and helping to mobilise stakeholders and communities[259].

Terms frequently encountered in futures work include 'foresight', 'Three horizons', 'wild cards' and 'weak signals'.

Foresight

The term 'foresight' is often used interchangeably with 'futures', both involving taking a systematic approach to thinking about the future, with the aim of identifying actions or goals that will support better future outcomes[260]. Foresight is defined as:

"*systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process aimed at enabling present-day decisions and mobilizing joint action*"[261].

Foresight involves using different methods (for example scenarios, Delphi, horizon scanning) and engaging with stakeholders so that policy and decision making includes long-term considerations[262]. A range of possible futures and strategic options in those futures are generated, in order to understand possible challenges and risks and enable a proactive response[263]. Figure 20 summarises the foresight process.

Figure 20: The foresight framework
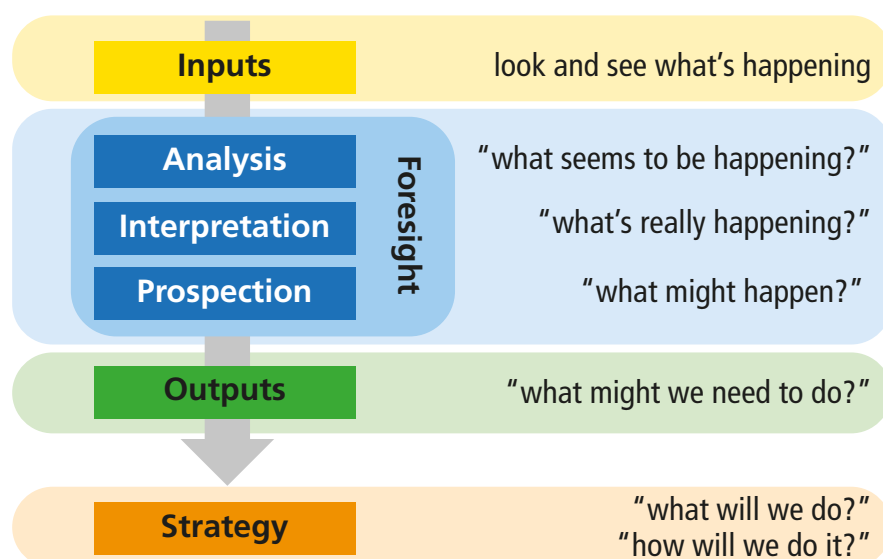
Source: Joseph Voros, (2003) "A generic foresight process framework", Foresight, Vol. 5 Issue: 3, pp.10-21, **https://doi.org/10.1108/14636680310698379**

The UK Government Office for Science, the United Nations Development Programme[264] and Government Ministries in Finland have opted to use the term 'foresight' to describe the projects and activity that provides evidence to policy-makers to support policies that are more resilient to the future.

The foresight approach has been used by the National Institute for Public Health and the Environment (RIVM), Netherlands to develop a series of National Public Health Status Foresight reports providing an overview of public health, with the aim of identifying important future uncertainties and informing policy (see case studies on page 59 and the accompanying background report).

Three Horizons

This is an approach that helps to identify how the importance of issues changes over time (Figure 21). Some issues are urgent and important in the present, are well understood and are usually being responded to, but may not be important for the long-term (Horizon 1). Horizon 2 issues become more important in the medium term, whereas Horizon 3 issues become significant in the long term although it is unclear how they will develop or whether they will be opportunities or threats. Futures work focuses on Horizons 2 and 3.

Figure 21: Three horizons model
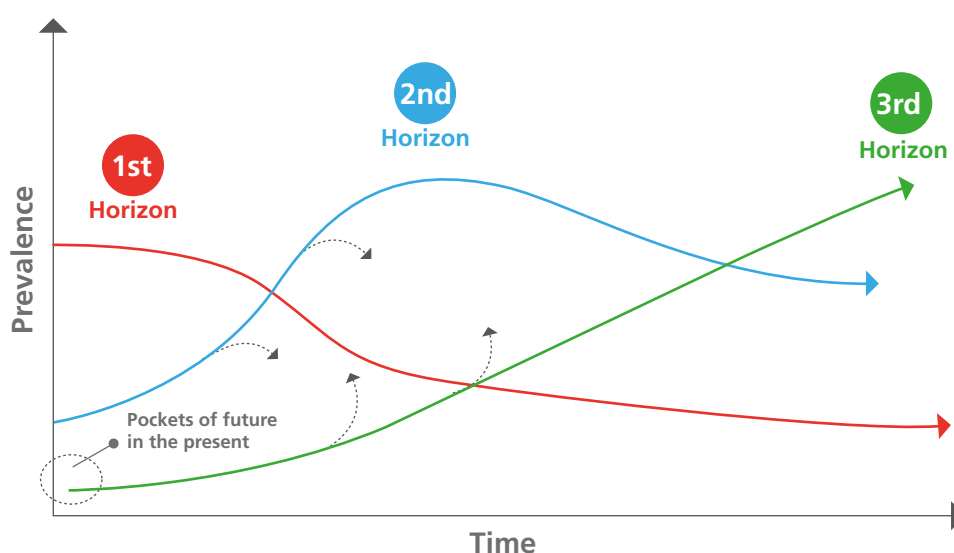
Source: UNDP Global Centre for Public Service Excellence (2018). Foresight Manual. Empowered Futures for the 2030 Agenda. Singapore: United Nations Development Programme.

'Weak signals' and 'wild cards'

When looking further into the future, it becomes more difficult to identify patterns or understand the significance of what is being observed. 'Weak signals' are developments that are unclear but provide early warning of future events. They are subjective, with little robust evidence to indicate that the subject will be of importance in the future. Identifying weak signals requires an understanding of the potential implications of the signal.

Weak signals enable the identification of 'wild cards'. Wild cards are situations or events which are considered to be very unlikely, but which could have a high impact if they were to transpire.

In this section we focus on tools that are most frequently used or have been recommended by experts in the field (adapted from Popper[256], United Nations Development Programme[253] and GO Science[248]). Whilst there is no consensus on the classification of the tools one such approach is highlighted below.

Table 3: Tools used in futures work

Tools for gathering intelligence about the future	**Horizon scanning** Horizon scanning is already a day-to-day activity for many organisations, though the extent to which the activity informs and influences strategy varies widely. It can be described as: '.....*a technique for detecting early signals of potentially important developments through a systematic examination of potential threats and opportunities, with emphasis on new technology and its effects on the issue at hand. The method calls for determining what is constant, what changes, and what constantly changes. It explores novel and unexpected issues as well as persistent problems and trends, including matters at the margins of current thinking that challenge past assumptions*' (Organisation for Economic Co-operation and Development, 2017)[265] The aim of horizon scanning is not to make predictions, but to understand underlying patterns of change and what may emerge[253].
	7 Questions During interviews, participants are asked 7 open ended questions, which are designed to help them place themselves in the future and explore any information they may have about the future. This approach is usually used at the beginning of a project to gather strategic insights from a range of stakeholders.
	Delphi The Delphi method is a frequently used approach to developing an expert consensus and involves polling of individuals repeatedly. In the case of futures work, experts are sent a series of questionnaires to collect their predictions on various trends. This can lead to a consensus forecast or a prioritisation of issues[254].
Tools for understanding change	**Driver analysis / mapping** Drivers are underlying issues that will 'drive' future change. Driver analysis involves identifying which of the drivers (political, economic, societal, technological, legislative and environmental) are critical considerations and will shape the future.

Tools for describing how the future may look	**Scenarios** Scenarios are effective tools for supporting the development of policy or strategy. The purpose of scenarios is not to predict the future, but rather to identify and consider future uncertainties and better understand implications of current policies and decisions. Normative scenarios involve describing a preferred future and identifying ways of achieving this and is developed through "backcasting" (see below). Explorative scenarios are aimed at improving understanding of future impacts of current actions, policies or drivers[266]. Scenario planning is considered to be a 'robust' tool, but is resource intensive. Scenarios may be produced by means of deskwork, workshops or the use of tools such as computer modelling, depending on the purpose of the scenario. **Visioning** The aim of visioning is to support participants to create a shared preferred future, which can be used to develop a policy, strategy, plan or service. Visioning usually looks to a period at least 10 years in the future and can help mobilise participants and stakeholders around a common aim. **SWOT (strengths, weaknesses, opportunities, threats) analysis** This is a commonly used management tool, and in the futures context can help organisations identify how to capitalise on opportunities and mitigate threats.
Tools for developing and testing policies and strategies	**Backcasting** This approach involves developing an imagined preferred future and working back to establish a path there from the present. Unlike forecasting, which involves extrapolating current trends to analyse the future, backcasting involves using a vision of the future to understand how a future situation could develop. **Roadmapping** This technique involves plotting when events / policies / research may have an impact on a topic or issue, thereby enabling participants to 'step into the future'. It provides a clearer understanding of what is already known about the topic; areas for speculation; and how changes over time may impact on how the future may look. The approach is frequently used by 'high tech' industries. **Windtunnelling / Policy stress-testing** This can be used to test how changes in the future could affect the delivery of projects, objectives or policies. Participants are able to imagine how they will meet objectives in different scenarios and then identify where greater flexibility or strengthening is needed.

Other tools frequently used in futures work include:

- **Trend extrapolation and projections**

Trend extrapolation is an established forecasting technique using statistical methods which are based on observations measured over time. Trend extrapolation is used to project the future pattern of such time series data.

Projections provide estimates about the future and are based on various assumptions; for example projections of disease prevalence are based on the assumption that population projections accurately reflect future population change.

- **Science fictioning**

This activity involves developing stories about a future point in time, where possible events have already taken place. The stories help to identify the consequences of these events. Whilst this technique is not usually used in policy-making, it is often employed in reports to illustrate an imagined future.

- **Modelling**

Modelling involves computer-based tools to help with understanding the connections and dynamics between factors and events (variables). Models are used to represent reality and can help to simulate what could happen in the real world, helping decision makers understand the impact of policies in advance[253]. Extrapolation is a simple form of modelling, but more complex models using many more variables are used in areas such as economic policy making.

- **Stakeholder analysis**

This tool can be used to identify which stakeholders should be involved in futures work and at what stage of the process. Developing a better understanding of stakeholder interest and influence can be used to manage stakeholder relationships.

Expert contribution

Experts participating in a round table discussion have provided advice on the use of tools and methods:

- The choice of tools or methods is subjective and there are no right or wrong approaches. Some occasions may require analytical tools e.g. scenarios, whereas others call for 'values based' tools e.g. visioning.

- There are readily accessible tools, workshop material and webinar material that can be adapted for use by organisations in Wales.

- Tools can be used at different levels (policy, strategy, operational); it is important to identify the most relevant tool for the level.

- It is important to take an iterative approach and repeat parts of the process when needed, including speaking to communities and stakeholders on multiple occasions.

- **Scenarios**

  - The main value of scenarios is in triggering conversations, enabling different ways of thinking and helping to build an understanding of the changes needed to achieve desired outcomes.

  - The quality and value of scenario-building is dependent on those involved in the process. Involving decision makers in scenario planning is key.

  - Narrative approaches such as 'storyboarding' can engage communities and are useful for developing visions for the future.

  - Using both technical and narrative methods to develop scenarios provides a richer picture. Trends and projection data can be used to test scenarios.

- **Backcasting** provides a focal point and helps to overcome the challenges of long-term thinking.

- **Foresight** processes are useful for public sector organisations carrying out strategy, innovation and policy work.

- The **Three horizons** framework can help organisations or sectors that find long-term thinking challenging.

- **7 questions** facilitates engaging with experts and gathering information quickly.

- **Newscasts** from an imagined future make the future feel real and can help secure greater involvement, particularly at workshops.

- Some of the best futures work involves **deep dives** (in depth analysis) of specific areas.

- **Speculative design** involves providing an image of the future and asking participants '*How does this feel*?' This helps draw out feedback and enables productive conversations.

- All tools and methods have limitations. For example, **backcasting** and **visioning** may be of limited use if the vision identified is achievable and framed by current thinking.

GO-Science - The Futures Toolkit[248]

This resource is aimed at supporting policy professionals to embed long-term strategic thinking in the policy and strategy process.

The Toolkit covers:

- ✓ Introduction to futures thinking

- ✓ Pathways for combining tools to meet business needs

- ✓ Tools for gathering intelligence about the future

- ✓ Tools for exploring the dynamics of change

- ✓ Tools for describing what the future might be like

- ✓ Tools for developing and testing policy and strategy

- ✓ Evaluating the impact of using the tools

The Toolkit is based on GO-Science's experience of running futures work and has been developed in collaboration with other UK government departments and futures practitioners, who use these tools in a range of settings.

Further information is available at:
www.gov.uk/government/publications/futures-toolkit-for-policy-makers-and-analysts

Case Studies

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Key points
- Fourteen Welsh, UK and international case studies are used to highlight how different tools can inform planning and policy for the future.
- All the case studies utilise two or more tools or methods including horizon scanning, backcasting, Delphi, 7 Questions, scenarios, policy stress-testing, SWOT analysis, science fictioning, and modelling.

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We have identified 14 case studies (table 4), covering local and national activity in Wales and the UK as well as international examples from Finland, Netherlands, Denmark, New Zealand and the USA. Each case study demonstrates how different tools can be used to inform planning for the future. For example, Case Study 2 (Lansbury Park: A Deep Place Plan) is a study with a local focus looking at the reasons and consequences of economic activity in a local housing estate in Caerphilly, using tools including horizon scanning, data analysis, one-to-one interviews, focus groups and backcasting. Further details of each case study are provided in an accompanying background report.

Futures studies are the subject of academic research. For example, Finland Futures Research Centre (Turku School of Economics at the University of Turku, Finland) undertakes futures research – one of few university departments in the world to do so[x].

Table 4: Summary of case studies utilising futures tools and methods

Case studies from the UK
1 **Future Drivers of the Health of Londoners (Public Health England and Association of Directors of Public Health London). 2016** A project that facilitated discussions among public health teams and system leaders about the future drivers of health in London, with the aim of informing strategic planning. Tools / methods used: Horizon scanning, webinars. Further information: **http://adph.org.uk/networks/london/programme/future-drivers-of-the-health-of-londoners/**
2 **Lansbury Park: A Deep Place Plan (Deep Place Centre). 2017** A study that investigated the reasons for, and consequences of, economic inactivity in Lansbury Park, a large Local Authority housing estate near Caerphilly town centre. The project generated action points for community renewal. Tools / methods used: Horizon scanning; data analysis; one-to-one interviews; focus groups; backcasting. Further information: **www.caerphilly.gov.uk/CaerphillyDocs/News/LansburyParkDeepPlacePlan.aspx**
3 **Tredegar Deep Place Study (CREW, Regeneration Wales Adfywio Cymru). 2014** A project that was aimed at developing an understanding of a single disadvantaged location, identifying weaknesses (which act as constraints), as well as opportunities (which could be exploited) to establish a sustainable future for the community. Tools / methods used: Horizon scanning; backcasting. Further information: **www.regenwales.org/project_9_The--Deep-Place--Study**

x   Further information is available at: **www.utu.fi/en/units/ffrc/Pages/home.aspx**

4	**Health & Safety Executive**
	A dedicated team provided foresight capability to the Health and Safety Executive, to identify new and emerging issues in order to inform specialists and policy makers of potential future workplace health and safety risks. More recent work includes a report on developments anticipated in the UK's approach to the generation, storage and use of energy.
	Tools / methods used: Horizon scanning; driver mapping; Delphi; Axes of Uncertainty; 7 Questions; scenarios; policy stress-testing; SWOT analysis.
	Further information: **www.hse.gov.uk/horizons/**
5	**Newport 2050 Ward Scenarios (Netherwood Sustainable Futures). 2015**
	Newport City Council commissioned scenarios for how some wards in Newport (Langstone; Lliswerry; Pillgwenlly; Rogerstone) might look in the year 2050.
	Tools / methods used: Horizon scanning; scenario-planning; science fictioning
6	**Tackling Obesities: Future Choices (GO Science). 2004**
	A major project by the Government Office for Science (GO Science) that modelled future trends in obesity and its potential future health impacts, with the aim of informing government policy on reducing obesity.
	Tools / methods used: Issues tree; drivers of change analysis; scenarios; systems mapping; wind-tunnelling.
	Further information: **www.gov.uk/government/publications/reducing-obesity-future-choices**
7	**Health Education England**
	An approach that provided Health Education England with evidence to underpin workforce development strategies and long-term investment decisions.
	Tools / methods used: Horizon scanning; evidence base development; demand driver analysis.
	Further information: **https://hee.nhs.uk/our-work/strategic-framework**
8	**Embedding horizon scanning activities across Public Health England (Public Health England)**
	A review with the aim of ensuring that horizon scanning became an effective corporate activity that better enabled the organisation to prepare for threats, risks, issues and opportunities and supported the organisation to deliver its core functions.
	Tools / methods used: Literature review; scenario development; workshop.
9	**Future Transport Demand in the North of England (Transport for the North).**
	A study which produced the first pan-Northern transport demand scenarios for road and rail travel in the future, providing a better understanding of where improved connectivity and infrastructure investment is needed to support economic growth of the Northern Powerhouse. The study was conducted as conventional approaches to forecasting were unlikely to capture economic transformation envisaged for the North.
	Tools / methods used: scenario planning; modelling
	Further information: **https://transportforthenorth.com/wp-content/uploads/TfN-Future-Transport-Demand-Statement.pdf**

International case studies

10 Images of the Future of Social and Health Services (Finland Futures Research Centre (FFRC)). 2015

A research project that assisted the Finnish social and healthcare sector (both public and private) in their planning of future services.

Tools / methods used: qualitative survey work; horizon scanning; scenario building

Further information: **www.utu.fi/en/units/ffrc/Pages/home.aspx**

11 The Public Health Foresight Study 2018 (Rijksinstituut voor Volksgezondheid en Milieu – The Dutch National Institute for Public Health and the Environment). 2018

A four yearly report, providing an overview of anticipated future developments in prevention, health care, disease and health and determinants of health. The report serves as the basis for health policy.

Tools / methods used: horizon scanning; scenario-planning; data analysis (including future projections).

Further information: **www.vtv2018.nl/en**

12 The Danish Healthcare System 2030 (Copenhagen Institute for Future Studies). 2017

A report that identified the challenges and opportunities for health in a Danish context.

Tools / methods used: scenario-planning; horizon scanning; in-depth research.
Further information: **http://cifs.dk/**

13 Future Demand (New Zealand Ministry of Transport). 2014

This project explored the uncertainty of demand for personal travel (mainly car use) by developing four future scenarios (set in 2042) looking at the possible impact on travel.
Further information:
www.transport.govt.nz/multi-modal/keystrategiesandplans/strategic-policy-programme/future-demand/

14 Public Health 2030: A scenario exploration (Institute of Alternative Futures (USA)). 2014

This report set out to identify answers to a number of public health questions facing the USA. The report had a national focus, but provided supplementary toolkits to enable futures work to be done at a local level.

Tools / methods used: Horizon scanning; scenario-planning; expert panels; workshops.

Further information: **www.altfutures.org/projects/public-health-2030/**

Looking to the future:

Conclusion, recommendations and next steps

Conclusion

Wales is at a critical point in developing its approach to long term thinking and planning, as part of its journey to building a sustainable future. This has been driven by the adoption of the ground-breaking Well-being of Future Generations Act, which translates the Sustainable Development Goals into the Welsh context. We know from the experiences of other countries that the required change will take time; it has taken Finland twenty years for futures work to be embedded in the political process and become part of the national discourse. Singapore and Finland have specific Committees for the Future[xi], whilst Scotland has a Futures Forum (a think tank supporting Scottish Parliament to consider the long term future effects of decisions)[267].

Our review of WBAs suggests that PSBs would benefit from incorporating futures tools and methods into their strategy development and planning cycles - this is likely to reflect the position of other public bodies and organisations in Wales. We are aware that some public sector organisations in Wales, including PSBs, have started this journey over the past year.

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xi   Further information is available at: **www.fdsd.org/ideas/the-committee-for-the-future-finnish-parliament/**

Recommendations

The following recommendations are primarily aimed at public bodies and PSBs in Wales. However, leadership and commitment is required from all sectors to achieve culture change across Wales, whereby long-term thinking is part of everyday decision making and action.

	Recommendation	Comment
	Embedding futures work into organisational planning	
1	Futures work must be integral to public bodies' and PSBs' responses to the Well-being of Future Generations Act.	Futures tools and methods can be used to support strategy and planning.
2	Futures work should be used to stretch planning beyond short and medium term (3 to 5 years) horizons.	Futures work can be used by organisations to move towards planning for 25 years, as advocated by the Act.
	Building futures work capacity and skills	
3	Build capacity, skills and confidence for futures work through training, adapting tools, learning from case studies and seeking guidance from experts in the field.	Capacity building should be at a local and national level, focusing on those leading and developing futures work.
4	Further build the skills of the public health workforce so that they are able to support futures work.	Public health practitioners often have relevant skills including in community engagement, health intelligence and in health impact assessment.
	Investing in futures tools and methods	
5	Optimise the use of data and technology and invest in modelling tools to improve understanding of future impacts of policies and decisions.	Modelling can help test ideas and improve understanding of risks, opportunities and consequences in a complex world. Technology such as virtual reality can be used in scenario building.
6	Focus Wales' futures work to address gaps in current knowledge and understanding or in areas of significant public sector spend.	Maximise the impact of limited resources by identifying and addressing gaps and focusing on areas of high spend, such as health and social care.
	Collaborating and sharing insights and intelligence	
7	PSBs and public bodies should share futures insights and collaborate on futures work.	This includes sharing insights and outputs from futures work. For example, horizon scanning outputs can be relevant to a range of organisations.
8	Make relevant data, intelligence, evidence, case studies and promising practice readily accessible, for example through a regularly updated single repository.	This should also include information about tools, methods and emerging technology.

	Utilising expertise and experience	
9	Utilise the expertise of organisations (or individuals) experienced in carrying out futures work.	Expertise exists in Wales, the UK and internationally across different sectors including public, private and third sector and academia.
10	Learn from examples of futures work from other countries and consider how these can be applied to the Welsh context.	As well as countries that are already undertaking futures work, there will be examples emerging from other countries as they develop their responses to the United Nations 2030 Agenda for Sustainable Development.
	Involving citizens and stakeholders	
11	Involve communities and citizens across generations, including children and young people, in futures work.	Involvement will strengthen futures work by challenging mind-set and assumptions, generating new ideas and empowering communities. Futures work is for all, and not simply an academic process.
12	PSBs and public bodies should engage cross-sector stakeholders across policy, practice and academia in futures work.	All sectors can contribute to and benefit from futures work; collaboration will help accelerate progress.
	Evaluating change	
13	The status of futures work in Wales should be reviewed on a routine basis.	Futures work should be used to inform the Future Trends Report and the Future Generations Report, as well as WBAs and well-objectives of public bodies.
14	Any futures work undertaken in Wales should be evaluated.	Evaluation will help to build an understanding of the impact of different tools and methods.

Next steps

Driven by the Well-being of Future Generations Act, building on learning and approaches from other areas, and utilising tools already highlighted in this report, Wales has the building blocks for developing its futures approach. Initial actions that policy makers, public bodies, PSBs and other organisations in Wales should consider include:

- Seeking advice from experts in the field (from Wales, UK and internationally) to support direction setting and enable early progress.

- Identifying how expertise in futures thinking could be developed, where it is best placed and the level of investment required. The Office of the Future Generations Commissioner already has a clear role in supporting this. This needs to be something all organisations should be engaged in and considering. Additionally, learning from other countries shows that national approaches can add value and drive change.

- Building networks between organisations across different sectors, with the aim of sharing learning from developing practice.

- Utilising readily available resources such as *Making a Difference: Investing in Sustainable Health and Well-being for the People of Wales*[42], which provide sustainable solutions to achieving better economic and health outcomes through interventions that have both short and long term benefits and support a preferred future for Wales.

Glossary

This section excludes terms which are already fully defined in the text of the document.

Adverse Childhood Experiences (ACEs)	Stressful experiences occurring during childhood that directly harm a child (e.g. sexual or physical abuse) or affect the environment in which they live (e.g. growing up in a house with domestic violence).
Anti-microbial resistance (AMR)	The ability of microorganisms (e.g. bacteria, viruses) to resist the effect of antimicrobials (e.g. antibiotics, antivirals), resulting in standard treatments becoming ineffective.
Chronic obstructive pulmonary disease (COPD)	A group of progressive lung conditions causing breathing difficulties, including emphysema and chronic bronchitis.
Dependency ratio	Number of children (aged 0-15 years) and older persons (aged 65 years and over) compared to the working age population (16-64 years).
Employment rate	Proportion of the working age population aged 16-64 years who are employed.
Excess winter deaths	Deaths directly related to cold weather in people who generally have underlying health problems but would not be expected to die during this period. It is calculated by comparing the average number of deaths during the winter period (December to March) with the average number of deaths during the preceding August to November and the following April to July.
Foresight	A systematic, participatory, future-intelligence- gathering and medium-to-long-term vision-building process aimed at enabling present-day decisions and mobilizing joint action.
Futures (work)	An approach or way of thinking about the possible, probable, and preferable futures and the underlying structures that could give rise to particular future characteristics, events, and behaviour.
Gross Domestic Product (GDP)	The monetary value of all finished goods and services produced in a particular country.
Healthy life expectancy	The average number of years a person can expect to live in good health, assuming that current mortality rates and levels of good health for the area in which they were born, applied throughout their lives.
Life expectancy	An estimate of the average number of years a person can expect to live based on the year of their birth, their current age and other demographic factors including gender. The estimate assumes that current mortality rates for the area in which they were born applied throughout their lives.
Limiting long term illness	Where day-to-day activities are limited a lot because of a health problem or disability lasting (or expected to last) at least 12 months.
Low birth weight	Babies born weighing less than 2,500g as a percentage of all singleton live births for which birth weight is known.
Non-communicable disease	A diverse group of chronic diseases which are not passed from person to person. The main types are cardiovascular disease (e.g. heart attacks or strokes), cancers, chronic respiratory diseases and diabetes.
Pandemic	The worldwide spread of a new disease.
Scenarios	Stories that describe alternative ways the external environment might develop in the future and how different conditions might support or constrain the delivery of policy and strategy objectives.
Trend	A visible – or emerging – pattern of events that suggest change. In futures thinking, a 'trend' becomes a 'driver' when it acts on the policy or strategy area of interest.

Abbreviations

ACEs	Adverse Childhood Experiences
EU	European Union
FFRC	Finland Futures Research Centre
GDP	Gross Domestic Product
GO Science	Government Office for Science
NHS	National Health Service
NQF	National Qualification Framework
PHE	Public Health England
PSB	Public Services Board
UK	United Kingdom
WBA	Well-being Assessment

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Health Improvement

Providing information, advice and taking action, across sectors, to promote health, prevent disease and reduce health inequalities

Health Protection

Providing information, advice and taking action to protect people from communicable disease and environmental hazards

Microbiology

Providing a network of microbiology services which support diagnosis and management of infectious diseases

Health intelligence

Providing public health data analysis, evidence finding and knowledge management

Public Health Wales
what we do

We exist to protect and improve health and wellbeing and reduce health inequalities for people in Wales. We work locally, nationally and internationally, with our partners and communities, in the following areas:

Screening

Providing screening programmes which assist the early detection, prevention and treatment of disease

Safeguarding

Providing expertise and strategic advice to help safeguard children and vulnerable adults

Primary, community and integrated care

Strengthening public health impact through policy, commissioning, planning and service delivery

NHS quality improvement and patient safety

Providing the NHS with information, advice and support to improve patient outcomes