Shaping Health Futures

Preparing for tomorrow's possibilities today

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The Health Foundation

About this report

This report has been written to provide the background and context for the Health Foundation's Shaping Health Futures programme. It was produced as a briefing for a meeting with programme stakeholders in June 2019.

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Summary

- The UK is facing a time of significant change and uncertainty, with implications for our health. Changes in the population, society, technology, politics, the environment and other areas will interact in complex ways to shape the future of health and social care.

- Some long-term issues are relatively well known to health and social care leaders, such as growing numbers of people living with multiple long-term conditions. But the health implications of other changes may be less visible — such as rapid advancements in digital technologies, climate change, or the potential long-term effects of austerity. Changes in these areas bring both challenges and opportunities, as well as difficult questions and trade-offs.

- While the future is complex and uncertain, it is not predetermined. In each of these and other areas, policy decisions taken (or not taken) today will help shape health and social care in the future — for better or for worse. Building sustainable health and social care systems requires today's leaders to consider the many factors that interact to influence health, the range of possibilities for the future, and which policies and approaches could help guide the system towards desired outcomes, such as reduced health inequalities.

- Although plans for the future of health and social care are developed regularly — most recently in the *NHS long term plan* — policymaking for health and social care in England is often characterised by short-termism. For example, historic weaknesses in workforce planning mean that the NHS faces a shortage of around 100,000 staff and an overreliance on international recruitment. Meanwhile, cuts to capital spending and public health are storing up problems for the future. Successive governments have also avoided finding a long-term solution to funding for social care — opting instead for short-term cash injections while the system falls deeper into crisis.

- There are many reasons why leaders may find it difficult to prepare effectively for the future. In some cases, it could be down to a lack of information about emerging trends and their potential impacts. In others, data on the issues may be available but evidence on potential responses less clear, or the solutions deemed too complex or costly. And in other cases still, the problem could lie on the side of decision-makers, with a lack of incentives, political will, or capability among leaders to consider and act on long-term issues. Managing today's issues is difficult enough, particularly when demand for health and social care services is growing faster than the resources to deliver them.

- Various approaches have been developed to help decision-makers identify, consider and respond to issues for the future — such as scanning the environment for signs of change, mapping complex systems, and modelling and imagining different scenarios. Diverse perspectives can be drawn on to provide a more informed view of future possibilities, as well as preferred outcomes that we should be aiming for.

- Some of these approaches have been used by organisations and governments in different countries, including by the UK government and in the NHS and social care. Different institutional models have been developed to try to connect long-term thinking to decision making — from building units that produce futures analysis, to introducing legislation to require policymakers to consider long-term impacts of today's decisions.

- Thinking about the issues facing health and social care in the future is nothing new. The more difficult question is to what extent this should be done and how this thinking can be used to help today's leaders make more effective decisions — particularly in the face of political realities and short-term pressures facing health and social care services.

- This report marks the start of a new programme of work at the Health Foundation — Shaping Health Futures — that will explore these questions in more detail. We will look at some of the long-term issues shaping health and social care in England, and what they mean for policy today. Our aim is to work with health and social care leaders to understand how planning for the future could be strengthened across organisations and services, and the resources and capabilities needed to do it. We believe this work has the potential to support health and social care leaders to create a more sustainable system fit for the future — a system with foresight rather than hindsight.

Introduction

The NHS in England has a long history of producing plans for the future — most recently in the form of the *NHS long term plan*[1] and, before that, the *Five year forward view* for the NHS in England.[2] In 2000, *The NHS plan* set out a vision for improving services to 2010.[3] And, looking much further back, the Ministry of Health and local government agencies developed 10-year plans for the future of hospitals and community health and welfare services in the 1960s.[4,5] Various government reviews — such as the Wanless report in 2002[6] — have also looked at long-term changes in the population's health and what they could mean for health services.

Short-term thinking

Yet on big issues like staffing and investment, the health and social care systems have often found it difficult to prepare effectively for the future.[7]

Examples of short-termism in policymaking for health and social care are not hard to find. Workforce planning in the NHS, for example, has historically been weak. The result is widespread staff shortages — currently standing at around 100,000 — and an overreliance on international recruitment.[8] Capital spending on health services — including investment in new buildings, equipment and IT — has fallen by 7% since 2010/11, and is low by international standards, storing up problems for the future.[9] And despite the long-term benefits of public health services to people and society,[10] they are often a target for spending cuts.[11] Successive governments have also avoided finding a long-term solution to funding for social care — opting instead for short-term cash injections while the system falls deeper into crisis.

The health and social care systems can also be slow to respond to changes in people's health needs — for example, slow to redesign care for people with chronic conditions — and slow to spot, adopt, and spread effective new innovations. In response to these issues, several reports have recommended strengthening the capacity for thinking about the long-term future of the health system in England — including the Chief Medical Officer for England's annual report in 2018[12] and the House of Lords committee on the long-term sustainability of the NHS.[7]

Long-term questions

Focusing more on the medium to long term is hard in systems as complex as health and social care. When people's lives and taxpayers' money are on the line, it's easy to focus on things that matter to people and politicians today and tomorrow — like reducing waiting times or balancing the books. Addressing these issues is no simple task, particularly when funding for health and social care barely keeps up with growing demand.[13] But the obvious risk is that short-term issues crowd out the thinking needed to prepare effectively for the future.

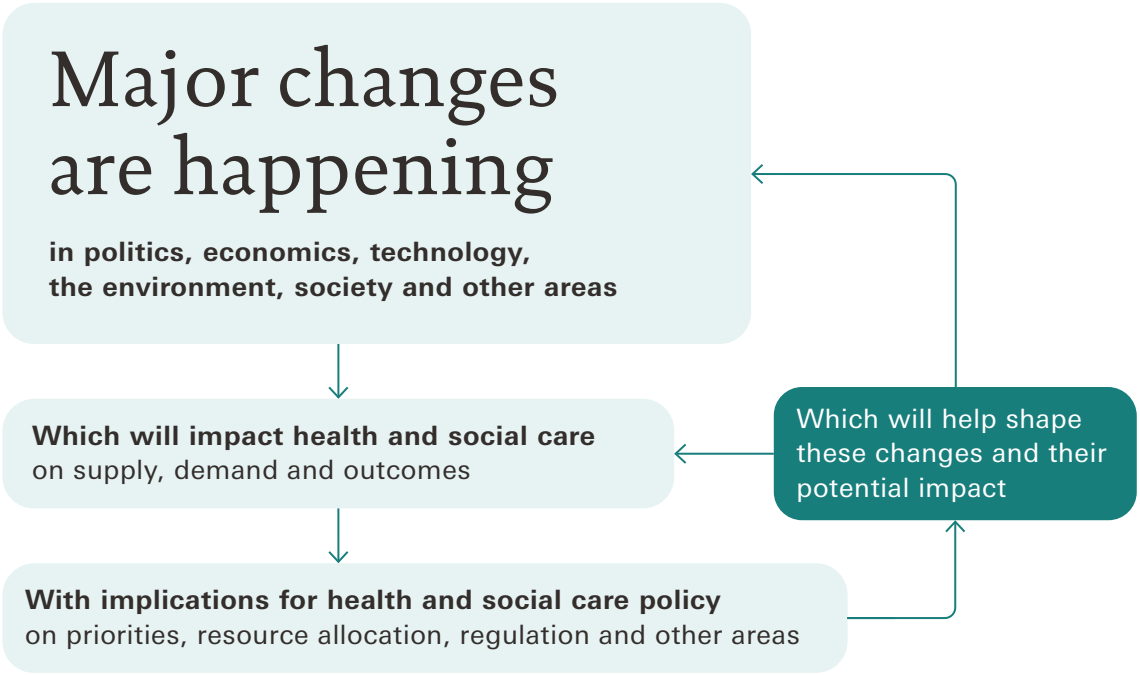
Some of the long-term issues affecting health and social care in the UK are relatively well known — even if the policy solutions to address them are comparatively less well developed. On the demand side, the population is ageing, growing numbers of people

are living with long-term conditions, and avoidable differences in health are persistent and widening (see section on population health needs on page 11). On the supply side, there are increasing technological developments that could offer benefit to the system and a chronic shortage of staff to work in health and social care (see sections on digital and data-driven technology on page 17 and health and social care supply on page 12).

But other emerging issues and opportunities for the future may be less visible to policymakers and the public. For example, what impact might job automation have on care and people's health? Will new technologies — artificial intelligence (AI), robotics and more — help us deliver better health and social care, more efficiently? Or could they worsen health inequalities and skew priorities towards more specialised care? What about the long-term health effects of public policy in other areas, like housing, transport, or the environment?

In each of these areas, policy decisions taken (or not taken) today will shape our health and health and social care in the future (see Figure 1). And some changes or unforeseen events that will fundamentally affect our health are currently unknown — but we still need to be prepared to spot them and respond.

Figure 1: How wider changes impact on health and social care, and how policymakers shape them



A wider policy problem

The health system is not alone in struggling to grapple with long-term issues. Despite some notable exceptions, governments in the UK have often found it difficult to plan and prepare for the future — on infrastructure, tax and other policy areas. Various policy initiatives, such as the government's Foresight programme, have been developed to build the government's capacity to consider issues for the future — with some successes, as we explore later in this report. Yet, according to a series

of parliamentary select committee inquiries into Whitehall's capacity to think long term, the government as a whole is not well prepared to face the future.[14,15,16]

Why is it so difficult? Most obviously because the future is inherently complex and uncertain, and today's issues take time to manage. Events cannot be predicted. Unexpected things happen. Contexts change. Plans have unintended consequences. In this context, some might conclude that incremental decisions based on today's information and issues — muddling through — are the most appropriate way to deal with the uncertainty by allowing for 'course correction'. But this approach can blinker policymakers to wider trends and possibilities that need to be prepared for. While no one can predict the future accurately, there may be barriers in the policymaking process that make preparing for it more challenging.

These include:

Short-sightedness – the public sector is characterised by year-to-year funding and often short-term political time horizons, shaped by electoral cycles. As a result, important issues that are on the horizon or just beyond it are often underexplored or ignored.

Poor information – even with a longer-term view, policymakers may lack information on emerging issues and trends, as well as potential policy responses and their likely impact.

Failure to join the dots – policymaking takes place within a complex system, with interdependencies between policies, sectors, and wider changes in society. Yet these linkages are often missed when thinking about policy problems or responses.

Wrong speed of decision making – often too fast to consider the depth of issues, or too slow if caught up in rigid hierarchies. Evidence generated outside of government also often fails to find its way into policymakers' view at the right time to influence decisions.

Narrow set of decision-makers – for example, a single point of authority on top of a hierarchy may not be the most effective way to make decisions. Consensual approaches may work better for some types of policymaking – particularly those with long-term implications.

Focus on interventions not context – the context in which a policy is implemented is often underexamined, yet context may have a more powerful effect than the intervention itself on outcomes.

Groupthink – for example, a lack of diversity in people, knowledge and approaches.

Lack of political will – where the problems may be well known, but the incentives, urgency or capability among policymakers to address them are missing, or weak.

This report

In this report, we describe why a stronger focus on long-term thinking is needed in the health and social care systems in England, and outline some of the approaches that might help. The paper does not — unfortunately — provide answers to all of the problems outlined above. Instead, it marks the start of a new programme of work at the Health Foundation looking at long-term issues shaping health and social care in England, and what they might mean for policy today. Our aim is to work directly with health and social care leaders to explore how policymaking for the future could be strengthened, and the infrastructure needed to do it.

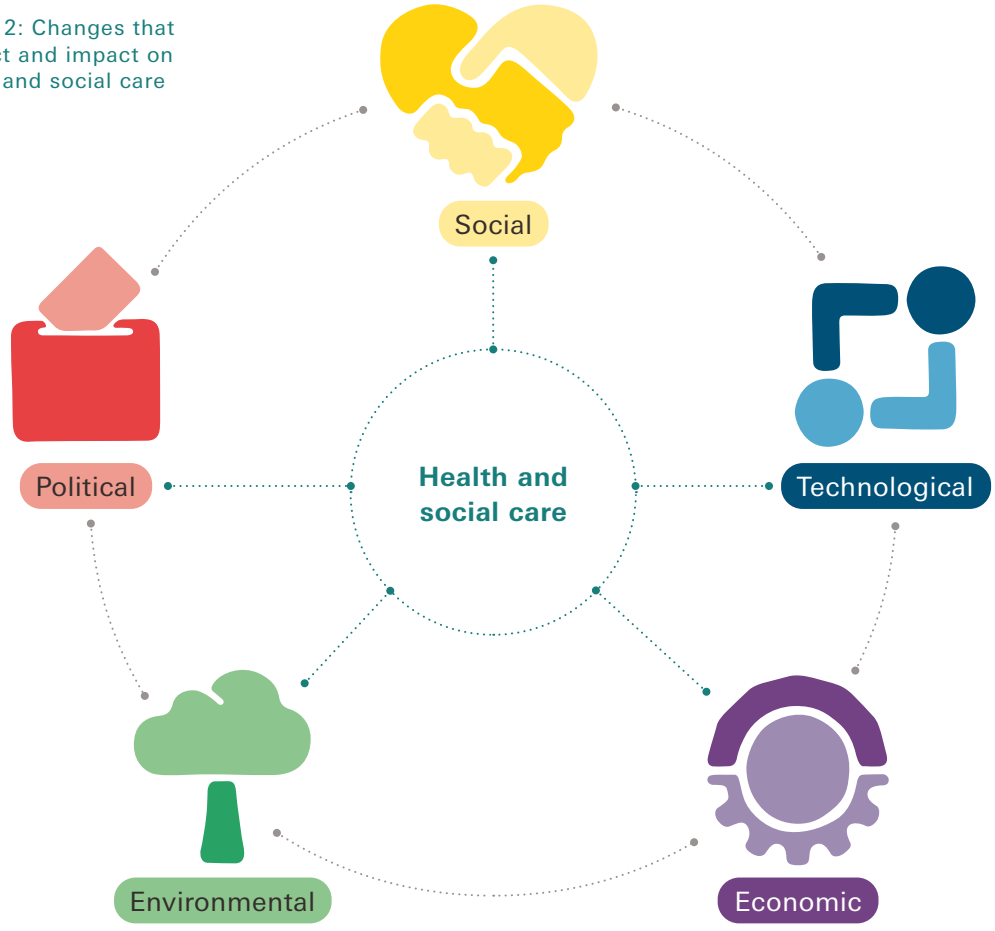
In the first half of the paper, we set out some of the major changes in the population, society, technology and other areas that are likely to shape health and social care in the future. In the second, we describe some of the approaches used in other countries and sectors to plan and prepare for the future, as well as examples from the UK.

Long-term changes

The UK will change significantly over the next 10–25 years, with implications for our health and the health and social care systems. Some of these changes are relatively well explored — for example, the ageing of our population and changing burden of disease. But there are also many uncertainties. For example, while we know that changes in technology are likely to shape the way we interact, work and access health and social care in the future, we can't predict exactly how or when. Seeking to understand these changes and how they might play out — as far as we can — is important for developing policies fit for the future.

Long-term changes in the global landscape are studied and reported on by the UK Ministry of Defence,[17] the US National Intelligence Council[18] and the World Economic Forum,[19] among others. In this part of the report, we outline some of the changes taking place in the UK — first changes to our health and health and social care systems, then broader shifts in the economy, environment and other parts of society — and how they could impact on health and social care. While changes in each of these areas are presented individually, in reality they are overlapping and interdependent (see Figure 2). This adds to their complexity.

Figure 2: Changes that interact and impact on health and social care



The section is intended to illustrate some of the major changes, rather than attempting to provide a comprehensive overview. There are inevitably trends and issues we miss.

Population health needs

The UK population is ageing and growing. For decades, the proportion of older people has increased due to improved life expectancy, while the proportion of children has declined.[20] Life expectancy is projected to continue to rise over the coming years, though at a slower rate than in previous years. Whether this slowdown will continue is hard to predict.[21] By 2033–34 it is estimated that there will be 5.9 million more people in the UK than in 2018–19.[22] By 2039, it is projected that more than one in 12 of the population will be 80 or over.[23] While life expectancy has increased overall, inequalities in life expectancy have persisted and widened.[24] Life expectancy gains have reversed among women in the poorest areas.[25,24]

Like other countries, the burden of disease in the UK has changed, placing greater demands on health and social care services. As people live longer, they are spending more years in poor health[26] and are increasingly likely to live with multiple conditions.[27] In 2015/16, one in three people admitted to hospital in the NHS had five or more health conditions — up from one in 10 in 2006/07.[28] The biggest disability burden in the population does not come from the illnesses people die from, but from enduring conditions like back pain and poor mental health.[29] Prevalence of mental health conditions appears to be increasing, particularly in deprived groups and women.[30,31]

The number of older people with four or more chronic diseases is projected to almost double between 2015 and 2035, with two-thirds also experiencing a mental health condition.[32] Multimorbidity is more common among people living in deprived areas, who also develop long-term conditions soonest.[24] One in four adults in England has two or more health conditions, and 28% of people in the most deprived areas have four or more.[28]

The burden of disease is shaped by the prevalence of the major health risk factors, including smoking, poor diet, high blood pressure, obesity, and alcohol and drug use.[29] The prevalence of smoking has declined in recent years,[33] but rates of obesity have increased, contributing to a major growth in the prevalence of diabetes (2.4% in 1995 to 6.9% in 2016, and projected to be 9.7% by 2035).[21]

It is hard to predict how prevalence of health risk factors will change over time. Rates of obesity and alcohol consumption, for example, have fluctuated.[21] The prevalence of obesity — though still a major public health concern — is lower than projected over a decade ago.[34] There are signs that young people are increasingly abstaining from alcohol, yet exactly why is not known.[35] Health behaviours are shaped by the social determinants of health — the conditions in which people are born, grow, live, work and age, such as income, employment, transport and education — which act as the 'causes of the causes' of chronic disease.[36,37,38] People's social context, in turn, is shaped by macro-level political and economic decisions[39] — so future health needs will be influenced by changes in the economy, work, and other policy areas (see sections on economy and living standards on page 19 and work on page 21).

A range of data and perspectives can be gathered to understand future health needs and prioritise areas of action, as an example from the Netherlands shows (see Box 1).

BOX 1 Dutch Public Health Foresight Study

Every four years since 1993, the Netherlands National Institute for Public Health and the Environment has published a Public Health Foresight Study. The study provides an overview of future developments in disease and health, determinants of health and prevention of disease.

The 2018 study combined a quantitative trend analysis with evidence reviews and expert consultation in a multi-staged approach to identifying priority areas for action.

Six trend scenarios were developed using projections to 2040 around the future of life expectancy, health, lifestyles, disease, inequalities and health expenditure.

Quantitative projections were complemented with three thematic reports on future health care demand, wider determinants of health, and technology.

Citizens, public health professionals and students were consulted on which of the developments they considered most urgent. From this, three challenges were identified and developed into detailed options for action:

1. persistently high burden of disease due to cardiovascular disease and cancer
2. growth in the group of older people still living on their own while suffering from dementia and other complex issues
3. increasing mental pressure on teenagers and young adults.

Health and social care supply

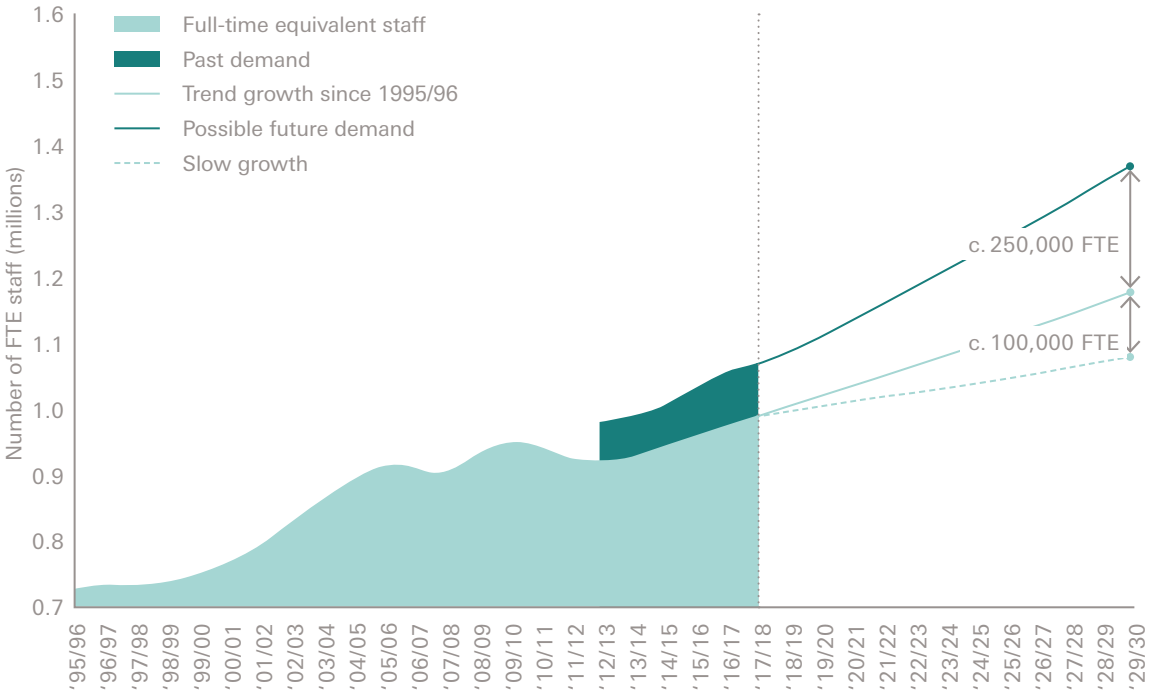
Since 2010, UK public spending on health has fallen below the historic average of 3.7% and has not kept pace with growing demand.[22] Adult social care spending across the UK fell by nearly 10% between 2009/10 and 2016/17.[22] And wider local authority budgets — which include spending on a range of services that impact health — fell by 32.6% between 2011/12 and 2016/17.[41] The public health grant in England fell by a quarter per person between 2014/15 and 2019/20.[11]

Recent analysis has suggested that over the next 15 years UK health spending will need to rise by 3.3% a year just to maintain current service levels, as a result of changing health needs and increasing costs. The picture is starker for social care, where an annual increase of 3.9% is needed to meet increasing demand.[22] Future levels of investment will ultimately depend on political choices, influenced by a range of factors. The nature of the UK's exit from the EU, for example, could affect future economic growth, which risks stalling investment in the NHS and other public services.[42] At the same time, public support for tax rises to fund the NHS has increased from 40% in 2014 to 61% in 2017.[43]

Even with additional funding, the health and social care system risks not having enough staff to deliver services in the future. The health care workforce in England already faces a gap of around 100,000 — the result of a slowing number of people entering the

workforce, increasing demand, and staff leaving the sector in worrying numbers. Based on current trends, this gap could reach as much as 250,000 by 2030 (see Figure 3).[44] In social care, almost half a million more staff are likely to be needed by 2033–34.[22]

Figure 3: Future supply and demand for NHS staff, 1995/96 to 2029/30



Source: Health Foundation *et al.* (2018).[45]

There are no simple solutions to the workforce challenge. Increasing the pipeline of professionals takes time and investment. So does creating the working cultures and conditions that encourage retention. The *NHS long term plan* outlines intentions to increase the recruitment of overseas workers into the NHS in the short to medium term.[1] But Brexit creates additional uncertainty around future migration from within the EU: what was previously a net inflow of nurses from the EU has recently turned into a net outflow.[46] It is also predicted that there will be a global shortage of 15 million health workers by 2030,[47] which raises further questions around the sustainability and ethical implications of a long-term reliance on recruiting workers from overseas.

There is consensus that health and social care services need to change in future to respond to the population's changing health needs – for example, by placing a greater focus on prevention, integrating services, and supporting people to manage their health.[1] Through the *NHS long term plan* and other initiatives, new models of team-based primary care are being developed that aim to better respond to people's changing health needs while also helping address GP shortages.

Medical and technological advances will also shape the future supply of health services (see section on digital and data driven technology on page 17). For example, automation technologies could be used to deliver administrative tasks in primary care, freeing up time for staff to be with patients.[48] The Royal College of Surgeons predicts that robots, AI and three-dimensional printing will change the way surgery is delivered in the NHS.[49] And more personalised medicine — for example, technologies that apply genomic data to identify patients who will respond to specific treatments — could help the NHS provide more effective services in the future.[50]

Yet new technologies, like personalised medicine and quantum technology, also bring new questions for policymakers — for example, about the right balance of investment between new medical technology and funding for preventive interventions that may be cost effective but underfunded (see Box 2).

BOX 2 Precision medicine or social policy?

Advances in precision medicine are intersecting with our understanding of the social determinants of health. Yet some researchers[51] worry about the potential for medical approaches to reducing health inequalities to be pursued at the expense of societal ones.

A growing body of research demonstrates the biological consequences of adverse social circumstances, such as living in poverty, and their impacts on health.[52,53,54,55,56,57] This includes how social deprivation changes gene expression, which can shift people's susceptibility to a variety of physical and mental health conditions.

What might be done with this insight? One future scenario might involve better prevention and treatment efforts through the health system. For example, there may be new opportunities to fund medical interventions that reduce the negative health impacts of poverty — for example, drugs that block the poverty-to-stress-to-cardiomyopathy pathway. This could help reduce inequalities in heart disease.

Yet even if social factors were incorporated into precision medicine efforts, population health benefits would still be limited given the focus on individual patients.[58]

More fundamentally, medicalising social issues could lead to a misdiagnosis of the causes of ill health and a misallocation of resources — towards downstream medical interventions that seek to reduce the health impacts of poverty, rather than upstream interventions to prevent it. Precision medicine targeting individuals — however sophisticated — will not replace the need for social policy to reduce health inequalities across whole populations.

New technology, equipment and other long-term spending needed to deliver health and social care services in the future also require investment. Yet the UK spends significantly less on capital — including investment in new buildings, equipment, IT, and research and development — than most other Organisation for Economic Cooperation and Development (OECD) countries, and capital spending by the Department of Health and Social Care has fallen by 7% since 2010/11.[59] This lack of investment is storing up problems for the future.

‘The form and pace of the world’s response to climate change will shape the health of nations for centuries to come.’

— The Lancet Countdown on Health and Climate Change

The climate is warming globally and in the UK with serious consequences for health. As the earth warms, weather extremes occur with more frequency and severity. The risk of disease increases and access to clean air, water and food could be compromised.[60] Hostile conditions may force migration, fuel competition for natural resources and, in turn, tension and conflict.[61] Populations outside the UK face more immediate and severe threats — and the effects can already be observed.

Models that predict climate scenarios have many uncertainties. The extent of climate change and its impacts depend on the action taken to mitigate and adapt. It is recognised, however, that governments' current commitments are not adequate to contain a temperature rise below 1.5°C above pre-industrial levels[63] — the level needed to significantly reduce risk to humans and ecosystems.[64]

Climate change is expected to cause more extreme weather events in the UK — heat waves, cold spells and floods. This will affect demand and supply of water.[65] Heat-related deaths are projected to more than triple to 7,000 a year by the 2050s.[66] Warmer temperatures may increase the risk of vector-borne diseases.[67] Flooding has immediate and long-term physical and mental health effects.[68] Yet the health impacts of climate change will not be experienced equally, with age, pre-existing conditions and socioeconomic status all affecting people's vulnerability to adverse outcomes.[69]

Climate change presents complex adaptation challenges for health and social care systems.[70] For example, 7% of hospitals and 9% of GP surgeries in England are in a flood risk area.[71] There is currently no regulatory framework to prevent overheating in hospitals and care homes.[66] And the workforce will need to develop new capabilities — from awareness of climate-related changing illness patterns to managing emergency situations.

Air pollution is closely related to climate change but has different health implications. According to Public Health England, poor air quality is the largest environmental risk to health in the UK[72] — estimated to have an effect equivalent to 29,000 deaths a year.[73] Exposure increases risk of cardiovascular and respiratory diseases and lung cancer.[74] Like climate change, it disproportionately affects the most vulnerable — the very young, older people, people living in deprived areas and those with pre-existing conditions.[75] It is estimated that the costs of air pollution to the NHS and social care in England could reach £18.6bn by 2035.[74] In reality the impacts may be greater: air pollution has also been linked to a wider range of conditions including diabetes,[76] dementia[77] and depression,[78] where further research is needed to understand the effects.

At the same time as the sector adapts to changing environmental conditions, its role in mitigating environmental impacts will become even more important. Health and social care services are collectively responsible for around 6.3% of the carbon footprint in England.[79] Nearly 3.5% of all road travel is related to NHS activity.[79] Since 2007, the NHS, public health and social care have reduced their combined carbon footprint by 18.5% against a backdrop of increased activity.[79] But more work is needed to reduce the sector's long-term contribution to changes in the climate and air pollution. For example, the National Institute for Health and Care Excellence (NICE) has produced information for patients and health professionals around the environmental impact of inhaler options.[80] NICE also recommends that providers take actions to reduce emissions and exposure including by switching to electric vehicles, developing green spaces, and supporting clean air zones.[81] These mitigating actions could also have near-term co-benefits for health through reducing exposure to pollution and promoting physical activity.[82]

Digital and data-driven technology

Advancements in fields such as AI, nanotechnology and genomics — powered by exponential growth and access to data — are driving rapid technological change in the public and private sector. In the last 25 years, technology has changed human life in revolutionary ways. It also continues to change health services. There are several technological trends related to health and health care that seem likely to continue or accelerate. For example:

- People embracing technology to monitor and manage their health. For example, apps and wearable devices collect and use health data, while genetic testing services provide information about propensity for developing illnesses. Technology platforms such as PatientsLikeMe[83] and HealthUnlocked[84] are also being used to connect patients with similar conditions to share information and support each other to manage their health.

- The expansion of remote care models, such as video consultations and symptom checkers, provided inside and outside the NHS. The *NHS long term plan*, for example, states that every patient will have a right to access a digital GP provider by 2024.[1]

- Genomics and precision medicine — while currently only applied to a small number of treatments — could improve the prevention, management and treatment of disease. The Industrial Strategy commits investment and support for genomics in the UK, including through whole-genome sequencing of the UK biobank.[85]

- Data held by the NHS, and collected by devices outside it, offers untapped potential to advance research and to plan and evaluate services.[86] The same is true outside the NHS. For example, Apple has developed software, called 'ResearchKit', to enrol research participants and submit data collected through people's iPhones.[87]

- The application of AI and machine learning techniques, powered by health data, to improve diagnostics, triage, reduce variation and increase efficiencies.[88] Some NHS providers are collaborating with commercial organisations — exchanging data and research — to explore potential uses of these technologies.[89]

New technologies in each of these areas are already being used and tested in the NHS. For example, since 2016, The Royal Free London NHS Foundation Trust and Google-owned AI company DeepMind Health have partnered to develop an app called 'Streams', which analyses patient data to alert clinicians to potential cases of acute kidney injury.[90] Livi, Push Doctor and other digital health companies are working with existing GP practices to offer digital services to patients in primary care, such as video consultations and apps to help people manage conditions. And Babylon — another digital health company — has launched their own GP service and an AI 'chatbot' symptom checker.

Digital and data-driven technologies have the potential to improve care quality and outcomes — for example, through better prevention and early identification of risks, supporting people to manage their own care, better medical decision making, boosting productivity, and improving access to services. But excitement about the potential benefits of new technology often outpaces evidence of impact — both for individual patients (eg. their care quality and outcomes) and the wider system (eg. on demand for care and its costs). For example, while Babylon's own assessment is that their symptom checker outperforms the average human doctor on a subset of the Royal College of General Practitioners exam, a study in the Lancet concluded that the evidence of this impact is not convincing.[91] A wider review of the evidence on bringing AI into health care found that 'the field is certainly high on promise and relatively low on data and proof.'[88]

Data and technology are instrumental goods; they do not in themselves lead to better health or health care. The challenge for policymakers is in ensuring data and technology are used maximally for public benefit, with minimum adverse impact. For example, remote consultations may provide faster access to general practice for some patients, but they could also stimulate demand among healthy patients and divert resources away from those with more complex health needs.

New technology may also fail to address the biggest challenges facing the health system. For example, many health apps are developed for the 'worried well' rather than for people with multiple health needs and low health literacy.[92] This risks exacerbating existing health inequalities rather than using technology to actively help reduce them. There are also many examples in the NHS where new technology has been introduced with the aim of reducing demand, only to have the opposite effect.[93]

There are also ethical challenges in applying AI and other technologies in the health system.[94] These include algorithmic bias in tools used for decision making (learned from the data they are trained on and the people who develop them),[95] as well as the lack of transparency in how AI-aided decisions are reached.[96] And then there's the question of who is accountable for technology-led decisions if something goes wrong. There are currently gaps in the public's understanding about what these new technologies can do and what they mean for the use of public data — including by the private sector.[97]

The emergence of new technologies does not necessarily mean that health and social care systems will be able to implement and benefit from them in the future. The NHS and local authorities are currently not well equipped to use data they already have to monitor and improve quality and efficiency of services.[98] The potential of data-driven technologies (such as machine learning) is also limited by the current quality of health and social care data, collected in disjointed and inconsistent ways.[89] A recent review argued that the gap between science and technological capabilities and what is done in the NHS is growing.[99]

This is, perhaps, not surprising, given the barriers to implementing and spreading new technologies in the NHS. Implementation is as much about people as technology: those seeking to embed new digital innovations in the NHS must take into account the complex social and organisational contexts in which new technologies are being introduced.[100] The Topol Review described the need for a 'fundamental shift in the balance of skills over the next two decades' for staff to be able to take advantage of new technology.[101]

Economy and living standards

Social and economic factors, like income, employment and housing, interact and play a major role in shaping health.[102] Incomes in the UK fell sharply after the 2008 financial crisis and wage growth has stalled ever since.[103] Employment rates are currently high,[104] but living standards have been squeezed by a combination of stagnant wages, increased cost of essentials, and the scaling back of social safety nets.[105] Future standards of living will be shaped by economic growth and its distribution. There is significant uncertainty around macroeconomic forecasts for earnings and employment in the UK, particularly in the context of Brexit.[103]

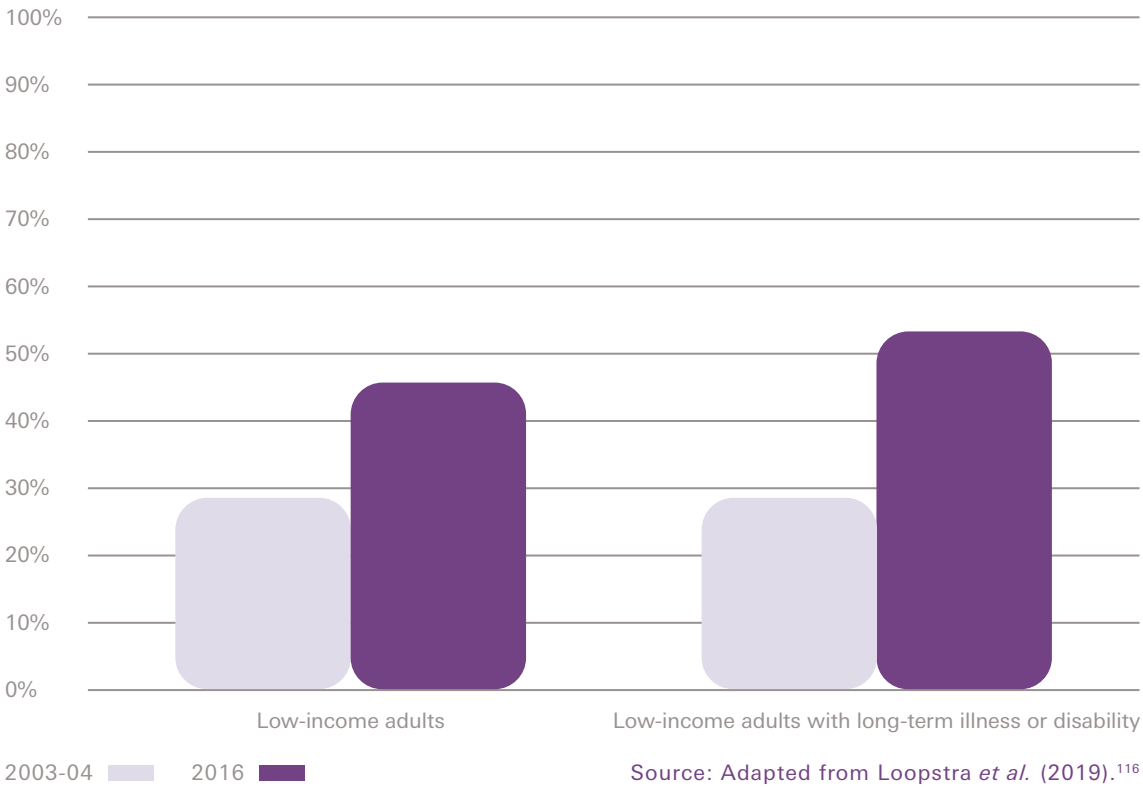
In 2019, nearly half of people believed that their standard of living would get worse over the next year; only 25% believed this as recently as 2016.[106]

Younger people appear to have been hit hardest by recent changes in pay and employment. The Resolution Foundation found that the trend of cohort-on-cohort wage increase that we have come to expect has stalled in the last decade.[107] In other words, younger people are earning less at their age than generations before them. The economic downturn is one reason why younger people are earning less. There are also signs that shifts in the labour market have affected the type of work younger people do, with evidence that some cohorts of younger people are doing lower paid types of work and are more likely to undertake part-time and non-standard work than their earlier counterparts.

Housing issues have come to define the challenges facing younger people today. At the age of 27, those born in the late 1980s had a 25% home ownership rate, compared with 43% for those born 10 years earlier.[108] Many more people are now living in the private rented sector and face the associated challenges of finding affordable, good quality and stable housing, with implications for health.[109] Minority ethnic groups are disproportionately affected. In 2015–17, White British households were less likely to rent than all other ethnic groups — true across all socioeconomic groups, most income bands, and most age groups.[110]

Changes in income and housing have shaped the characteristics of poverty in the UK today. Poverty and income inequality have fluctuated but persisted since the 1980s.[111,112] Today more workers are in poverty than at any point in the last 20 years. Child poverty has increased 15% in five years, almost entirely from within working families.[113] There are also growing concerns around people living in extreme poverty and destitution. Food bank use and homelessness have increased, with knock-on effects for the NHS and other services.[114,115] Between 2004 and 2016 food insecurity increased for low-income adults, particularly among people with disabilities (see Figure 4).[116]

Figure 4: Probability of food insecurity by disability status for lowest income groups in England, Wales and Northern Ireland in 2003–04 versus 2016.



Source: Adapted from Loopstra *et al.* (2019).[116]

National government policy is one set of factors that will impact the economy and living standards in the future. Since 2010 there have been cuts to welfare benefits and other social services, as well as the reversal of a range of other social policies that impact health and health inequalities.[117,118] Under current plans for tax and benefit policies, relative poverty and income inequality are expected to persist in the near future.[103] This is likely to have long-term health implications. For example, growing up in poor-quality housing impacts children's physical and mental health, educational attainment, and opportunities into adulthood.[119]

Work

Work and health are inextricably linked. Being unemployed, in insecure work, or working in poor conditions contributes to poor health,[120] while good quality work can help us meet our basic needs, lead secure lives, and bring purpose that is important for health.[102] The future of work is widely debated and the implications for health are complex and uncertain.

Full-time permanent work continues to dominate the UK labour market,[121] but more flexible working practices are growing. The proportion of the workforce that is self-employed increased from 12% to 15% between 2001 and 2017.[122] The 'gig' economy has developed quickly. A 2017 survey found that around 4% of people — generally younger people — undertook 'gig' work in the preceding year.[123] Flexible and irregular work brings freedoms, but also challenges: traditional worker rights, such as paid leave, sick pay and job protections, are not automatically granted.[124] Policymakers wanting to understand the impact of new forms of work on health and wellbeing will need to pay attention to work quality alongside traditional measures of employment and income.[125]

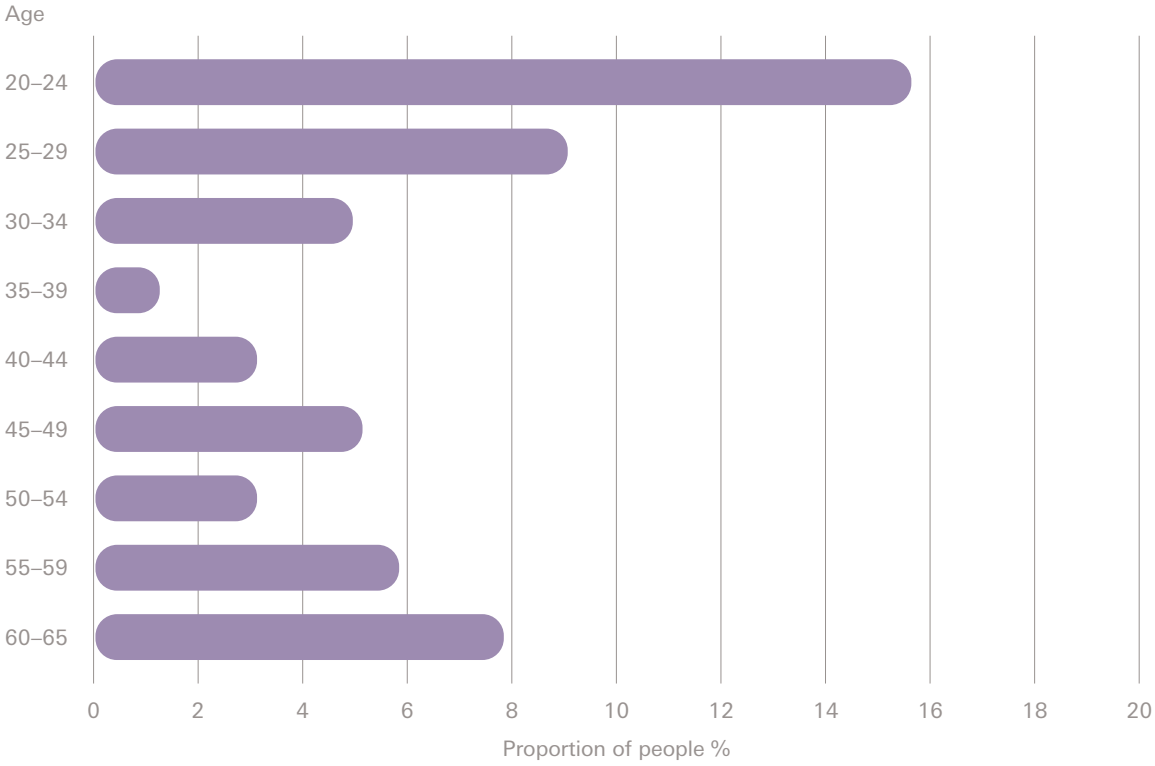
Much has been written about the likely impact of automation and particularly the potential for job displacement. Predictions for the future vary widely: the proportion of jobs estimated to be at risk from automation ranges from 47% to just 9%.[126] Office for National Statistics analysis suggests that 7.4% of jobs in England are at high risk of automation (defined as 70% chance of being automated). The risk is not distributed evenly, either by job type (see Table 1) or population group. Around 70% of roles at high risk of automation are currently held by women. People aged 20–24 are most likely to be at risk of having their job automated (see Figure 5).[127]

Table 1: Estimated risk of automation by job type, by highest and lowest

Lowest risk		Highest risk	
Medical practitioners	**18.1%**	Elementary sales occupations	**70.7%**
Higher education teaching professionals	**20.3%**	Shelf fillers	**71.7%**
Senior professionals of educational establishments	**20.6%**	Waiters and waitresses	**72.8%**

Source: ONS (2019)[127]

Figure 5: Proportion of people at high risk of automation, by age, 2017, England



Source: adapted from ONS (2019)[127]

On the flipside, there is also optimism about opportunities technology could bring. Estimates of job displacement are based on the jobs we currently have. As some roles are replaced, others will be adapted and integrated with technology, and new ones will be created.[128] As automation replaces routine tasks, people could be freed to undertake more rewarding work — as has been illustrated, for instance, through research on automation in primary care.[48]

There are limits to the tasks that technology can perform, where human intelligence and perception are still essential.[129] The caring roles and skills that depend on human interaction — traditionally undervalued and underpaid — could become sought after. Human skills, intelligence and perception are likely to be of enduring value.[130] How well industries and governments prepare the current workforce with the knowledge, skills and flexibility needed to adapt to new types of work will influence the impact of new technologies.[131]

The health implications of undertaking emerging types of work, such as gig work, are not well understood. Neither are the health implications of working increasingly alongside new technologies.[132,133] For example, automation and robotic technology can remove people from undertaking hazardous tasks and lead to safer decision making. But they could also act to harm mental health by removing human interaction and agency from work. Changing health needs (see section on population health needs on page 11) will also interact with changes in work. Employment rates for people aged 65 years or older doubled between 1993 and 2018,[134] and, under current law, the state pension age is rising to 68 by 2044.[135] More than one in five people aged 55–64 are limited in the work they can do by a health condition.[136] People in the poorest part of the population are more likely to be out of work due to illness.[136]

As work changes it is likely that social attitudes and expectations to working will change too. Alternatives to traditional employment models have been proposed as policy responses to promote people's economic security and wellbeing within a shifting labour market. One example is growing interest in the four-day work week. Already adopted by a small number of companies globally and in the UK, the model is supported by the Trades Union Congress as a means of sharing the benefits from technology across the workforce.[137] Another is Universal Basic Income, which would fundamentally alter the relationship between income and work.[138] Yet it is important to recognise that gainful employment can have health-promoting benefits beyond financial reward, and people value work beyond the income it brings.[139]

Social cohesion and connection

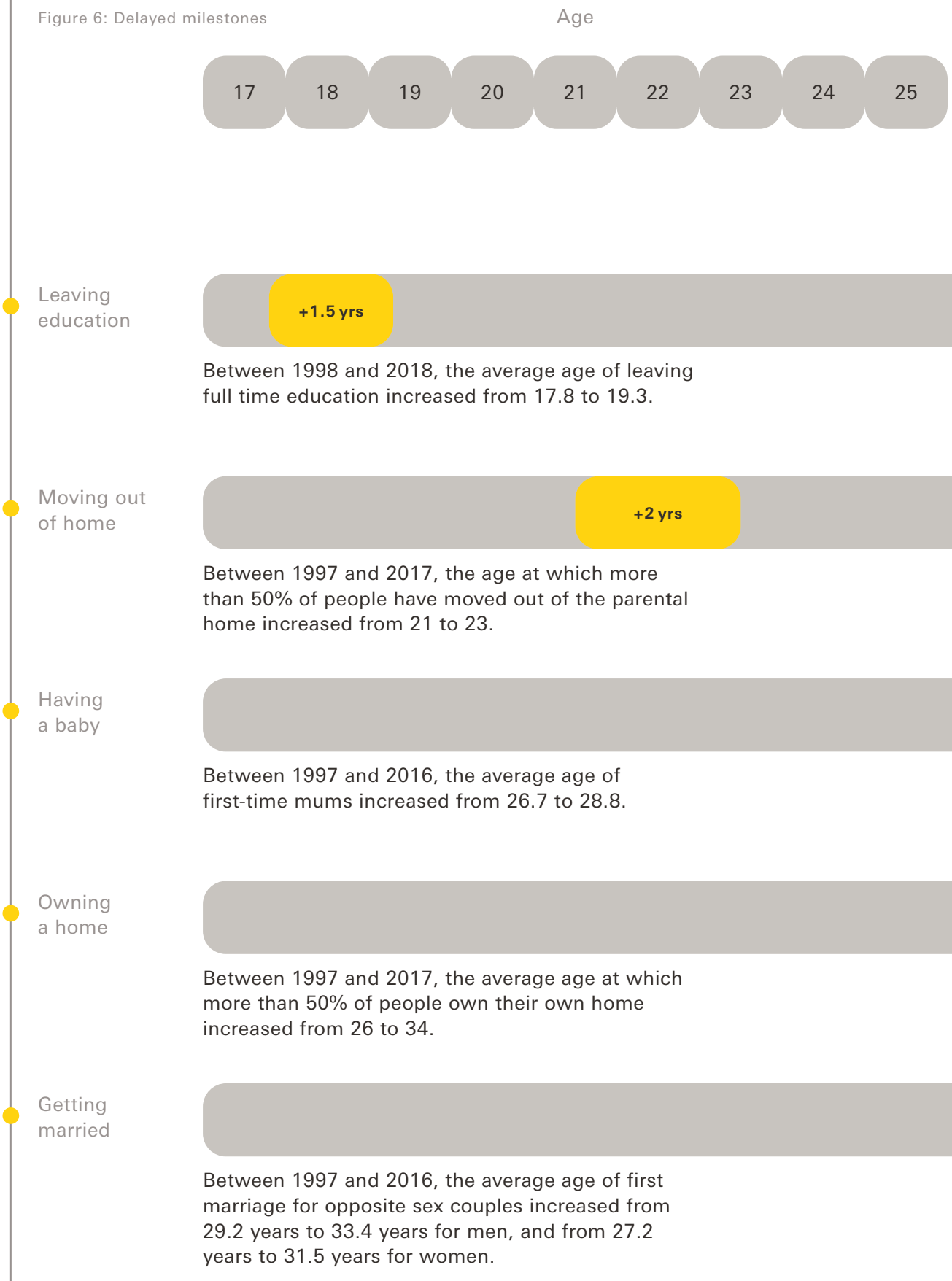
The economic, societal and technological shifts described in this section are likely to alter the way that people connect to each other, their communities and wider institutions.

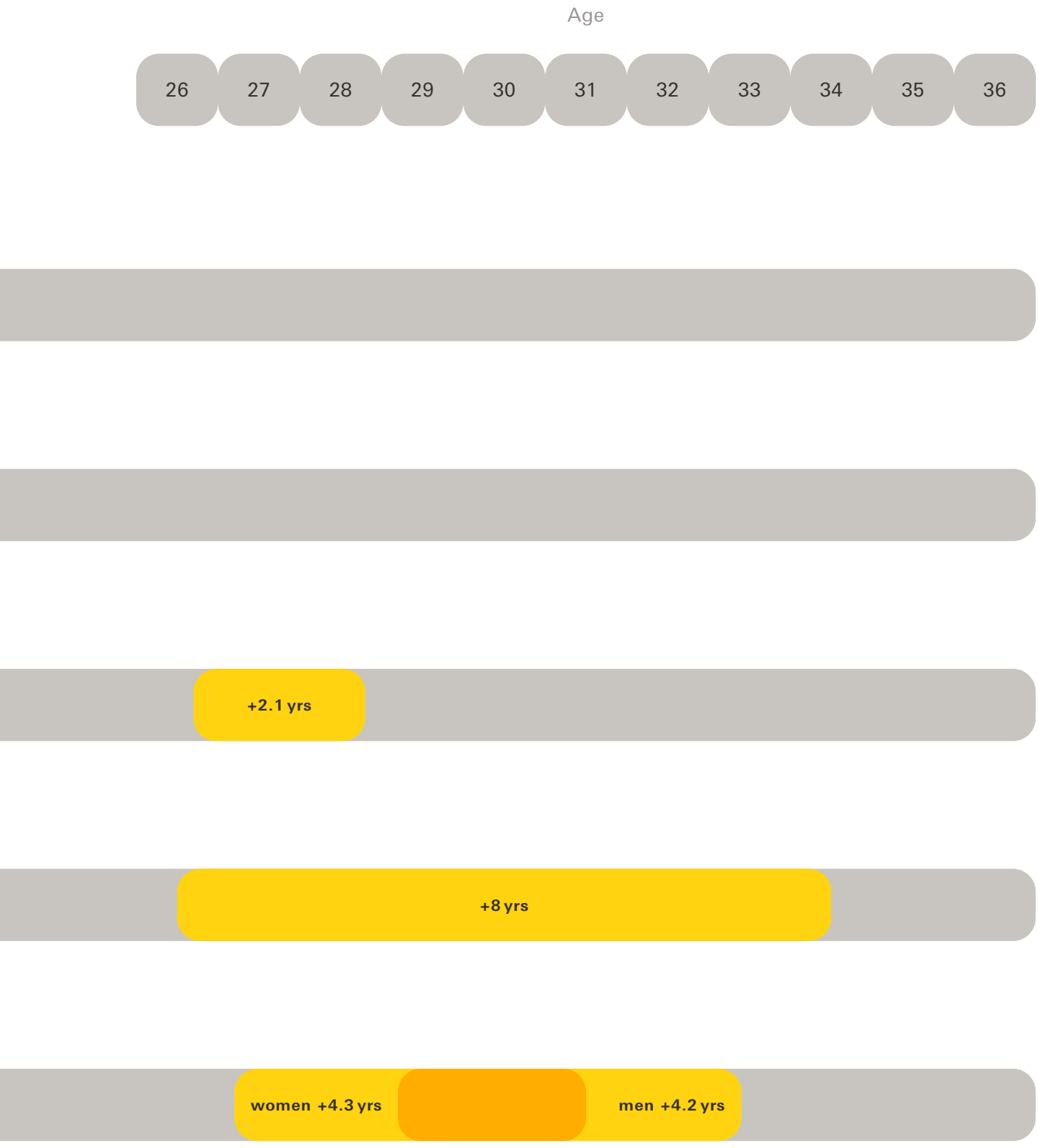
Social networks are important for our health. People who are socially isolated have a higher risk of early mortality, comparable with other well-established risk factors.[140,141,142] The older population, which is particularly vulnerable to isolation, is growing. A 26% increase in one-person households in England is projected between 2016 and 2041, driven largely by growing numbers of people aged over 65 living alone.[143] This can have knock-on effects for health and social care services. In one general practice in London, for example, older people living alone were 50% more likely to visit A&E than those who live with others.[144]

Increasing attention is being paid to isolation and loneliness at all stages of the life course, with survey research showing that loneliness is even more prevalent in younger people than older people.[145] This is against a backdrop of an increase in mental health conditions reported in young people generally[146] that is not yet well understood. Young people today have grown up in a time when technology has fundamentally changed the way that people interact. In digital terms, people are more connected than ever. But it is now recognised that technology use also has the potential to harm young people's psychological health.[147,148] The Royal College of Psychiatrists recommends that technology use is explored as part of assessing young people with mental health issues.[149]

Other societal changes are likely to have implications for people's social connections. The significant milestones that mark young people's movement into, and through, young adulthood — leaving education, entering employment, moving out of the family home, starting a family — have changed and delayed over time (see Figure 6). These experiences shape the relationships formed with friends, family and the community. For instance, more young adults now live in intergenerational family households or in rented accommodation (that is more likely to be overcrowded[150]). At the same time, community-based models of support are emerging in response to these changes. The HomeShare model, for example, has been developed to bring people with a spare room together with others seeking affordable accommodation in exchange for domestic support, in a sociable living arrangement.[151]

Figure 6: Delayed milestones





Source: ONS (2019)[152]

The UK today can appear socially and politically fractured. Divisions between groups in society are nothing new, but the EU referendum has exposed new dividing lines — for example, by age, education and place.[153] The picture is complex. In political terms, the British Social Attitudes Survey (2018 edition) found that people have become more divided by age and education (seen in the voting patterns of the 2017 general election and 2016 EU referendum). But consensus has grown on other social issues, such as gender roles. And political divides do not appear to have impacted on people's trust of others: the proportion of people who said that people could be trusted was at the highest level in 20 years.[139]

Political choices and engagement

All areas of change and uncertainly outlined in this section will be affected, to varying degrees, by political choices, such as the level and distribution of spending on public services. Political choices are also shaped by the public's attitudes and engagement.

Political participation and engagement in the UK have shifted in a number of ways. On one hand there are signs of renewed engagement in political processes. Party membership has risen after 50 years of decline.[154] The turnout of 16–24 year olds in the 2017 general election was the highest in 25 years;[155] whether this signals a new politically engaged generation is still to be seen. At the same time, there have been disruptions to the political order. The UK, along with other countries, has seen populist movements emerge that appeal to a mass will of the people pitted against a political and intellectual establishment. Overall in the UK, public trust in institutions (including the government, media, business and NGOs) is low.[106]

The nature of political engagement and participation has been affected by digital technology. It has provided opportunities for people to connect and mobilise around causes at speed and scale, including voices that are traditionally marginalised. Strikes and protests are coordinated globally. The recent school climate strikes, for example, were estimated to have taken place across more than 100 countries.[156] Elections are increasingly fought and won 'online'. But technology can also be exploited to threaten democratic processes: foreign interference in the EU referendum was attempted through digital influence campaigns.[157]

How these changes will play out in the long term and their implications for health and the health and social care systems are not clear. However, the recent increase in measles cases (linked to the spread of anti-vaccine misinformation on social media) is one example of a long-term health consequence of people turning away from traditionally trusted sources of information. Over half a million children in the UK were not vaccinated between 2010 and 2017.[158]

Survey research shows that less than one in five people in the UK think 'the system' is 'working for them' and more than two in three have a 'desire for change'.[106] Public support for the principles of the NHS remains steady.[159] But a lack of faith in the government's ability to use public funds to build a fair society could affect the shape of health and social care in the future.

“The future is already here –

it’s just not very evenly distributed.”

— William Gibson

Approaches to thinking about the long term

As the present is becoming more complex, so will the future. The first part of this report outlined a range of trends and uncertainties that could impact our future health and health and social care services. So what can policymakers do to prepare for and shape them?

Planning for the future is hard — and our policymaking processes are often poorly equipped to deal with complex, dynamic and uncertain issues that will play out over the long term. But it is not impossible. Various methods and approaches have been developed to help policymakers understand complexity and explore future implications of policy choices — including by deepening our understanding of what has happened in the past and taking a wider lens when thinking about today's issues.

Alternative futures

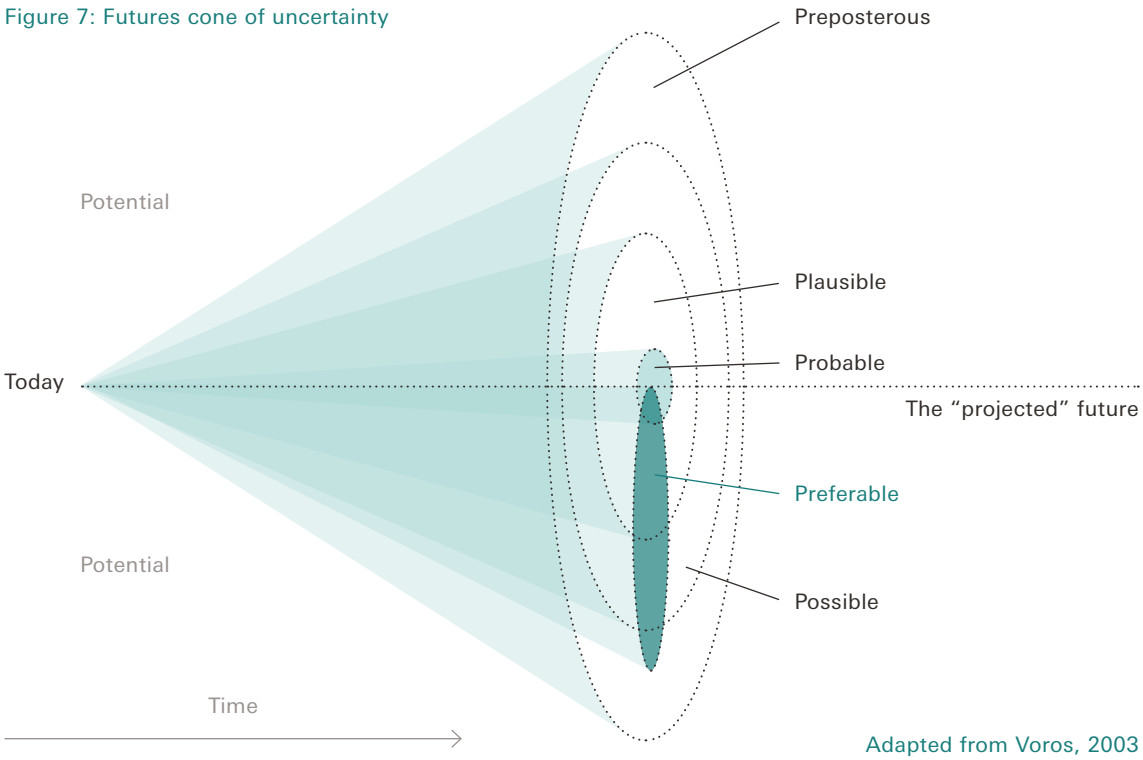
'Futures' and 'foresight' approaches focus on considering long-term issues and scenarios and integrating these insights into decision making.

They share the idea that:

1. the future is not predetermined.
2. the future cannot be predicted.
3. future outcomes can be shaped by the action (or inaction) taken today.

These principles follow that there is not one 'fixed' version of the future, but multiple potential futures.[160] To make sense of these potential futures, we can imagine and classify them based on their perceived likelihood — for example, as possible, plausible or probable. Figure 7 visualises a range of potential futures as they relate to the present.[161] The further ahead you look, the range of possibilities widens: the future becomes more uncertain.

Figure 7: Futures cone of uncertainty



Adapted from Voros, 2003

Our ideas about the future are subjective and different people will bring their own perspective — including which version of the future is preferable. For example, a decade ago, many people may have thought that Britain leaving the EU would be unlikely. Now it seems probable — but not certain. And our perception will change based on political events.

We imagine the future within the limits of our current information and understanding. Beyond these limits there are more possibilities that we cannot comprehend. Shocks or unexpected events, such as the financial crisis, happen that we are not well prepared for. But our understanding of what is possible can be broadened through introducing different sources of information and diverse perspectives in our decision making.

Present-day decisions

Decisions about short and long-term issues are taken every day across health and social care. For example, local health and social care systems develop annual plans to prepare for winter then apply short-term strategies to respond to peaks in demand. Commissioners plan services in anticipation of the population's changing needs, as well as in response to short-term financial pressures. Long-term investments are made in infrastructure, such as buildings and equipment.

It may be appropriate that decisions on some issues take in information with a short-term horizon, and some a longer term. But the problem arises if the 'decision-making orientation' applied to all types of decisions is short term — that is, this orientation only takes in a more limited set of proximal issues. Table 2 summarises some stylised examples and the results. Whether a decision has short or long-term implications, it will likely benefit from considering a wide range of information about that decision and its potential long-term implications.

Table 2: Today's decisions for the short and long term

Decision time horizon	Decision-making orientation: **NOW** Short-term fixes based on today's needs	Decision-making orientation: **FUTURES** Integrates a variety of data and explores uncertainly
Short term — for example, annual contracting in the NHS	Existing services are recommissioned based on historic activity and spend	Investment in new service models that account for both today's context and changing health needs
Long term — for example, national workforce planning	Boosting overseas recruitment to fill domestic workforce gaps, while neglecting longer-term training and education needs	Long-term strategy that considers recruitment and retention alongside potential changes in migration, cost of living, technology and other areas

By broadening the understanding of what is possible, assumptions and preconceptions about both types of decisions can be tested and challenged. Present-day choices and options can be weighed, and actions taken to increase the chances of realising the future that is wanted and mitigate against undesired outcomes. A key question is how best to do this in what is often a busy, pressurised environment.

Approaches and methods

A range of approaches have been developed to help build futures thinking into decision making. These draw on qualitative and quantitative methods and can be applied flexibly depending on the policy question, the issue explored and the availability of information. Many approaches to thinking long term — such as forecasting and modelling — are already used by health and social care systems, while others — for example, approaches that involve a diverse range of voices — may be less common.

Forecasting and modelling

Forecasting and modelling techniques describe possible futures using historical data and trends. Trajectories are modified based on assumptions related to the different factors that might influence them and how they interact over time.

These approaches inform health and social care policies and investments by anticipating trends in supply and demand. Findings from the Global burden of disease 2016 study, for example, have been used to forecast mortality and years of life lost for 250 causes of death to 2040 using a model that builds in individual forecasts of over 65 drivers of health.[162] These findings directly informed the priorities in the *NHS long term plan*, which include both short and longer-term actions for the health system.[1] Forecasting methods cannot predict the future; they are only as good as the data and assumptions used to construct them.

Modelling methods are also used to estimate the long-term effects of different policies and interventions. System dynamics modelling, for example — which tries to account for processes like 'feedback loops' in complex systems — has been applied to thinking about public health policy and interventions, like preventing chronic disease, since the 1970s.[163] Systems dynamics modelling was recently used to estimate the potential health and financial benefits of investing in policies to expand socioeconomic opportunities in US cities by 2040.[164]

Outside the health system, RAND Corporation has developed an approach called 'robust decision making' to explore how different policies fare under multiple simulated scenarios (see Box 3).[165]

BOX 3 Quantitative approach to supporting long-term decision making: RAND Corporation

RAND Corporation is a not-for-profit think tank. Originally founded to support the US military, it now works across a wide range of policy areas including energy, health care, and the environment. Scenario planning and the Delphi technique — two principal futures methods — were developed at RAND in the 1950s.

More recently, RAND has developed a set of analytical processes and tools (referred to by RAND as 'robust decision making') to support decision making in the context of uncertainty. The approach involves identifying and characterising the key uncertainties around a strategy. Potential options are then tested against thousands of different scenarios, generated through modelling different combinations of uncertainties. The model then identifies the policies that appear to stand up against the widest range of potential scenarios.

The approach was used for urban planning in Pittsburgh, USA, to help address the problem of the city's sewer system, which was failing in the face of increased rainfall and population growth. Debates circled around whether the solution was to expand the sewage treatment plant or invest in green infrastructure. Different strategies were evaluated across around 5,000 computer-simulated scenarios, modelling for uncertainties across the climate, land use and costs. The analysis found that expanding the treatment plant was most effective under most scenarios, but that green infrastructure was increasingly effective over time and increasingly cost effective as the climate changed. Partly in response to the findings, the Pittsburgh Water and Sewer Authority placed an increasing focus on green infrastructure.

Multiple perspectives

Information about future issues and implications for decision making can be gathered from a range of perspectives. Traditionally this knowledge has been sought from subject experts. The Delphi method, for example, is an approach where experts feed in their assessment on the future in multi-round surveys, building consensus around strategic priorities. Japan's government has used Delphi surveys since 1971 to inform national science and technology policy (see Box 8).

While Delphi and other approaches gather the opinion of experts, participatory approaches that involve a broader range of voices have grown in popularity.[166] The European Commission, for example, has used a large-scale exercise with citizens across 30 countries to inform the EU's future research and innovation agenda. When the outputs from the citizen-based exercise were compared to those of expert-based studies it was found that the citizens and experts produced different policy advice, for example in how problems were framed, the proposed solutions, and priority areas.[167]

The Health Foundation's Young people's future health inquiry has used workshops, social media analysis, surveys and other ways of directly engaging young people to gain a detailed understanding of the influences affecting their health.[168] These perspectives are now being used to guide research into the policies that could improve young people's health in future. The humanitarian sector has also demonstrated ways of engaging broadly with young people to set the strategic direction of organisations, globally and locally (see Box 5).

Horizon scanning

Information about emerging risks, opportunities and changes is all around us — in news, social media, articles, advertisements and elsewhere. Horizon scanning is a process of systematically searching the environment for the small signs of change now — the 'weak signals' — that could become the significant issues of the future. Different definitions are applied to the horizon scanning approach and the process can be scaled from a small one-off exercise to a continuous programme of scanning and analysis, and in all cases can be aided by computer software. Some organisations have developed processes for scanning weak signals related to the topics that matter to them — for example, by systematically gathering views from front-line staff.[169] Some governments have established dedicated horizon scanning teams (see Box 6), including the UK government (see Box 9). Horizon scanning teams have also been developed by national bodies within the health system.

Scenario building

Information gathered from these approaches can feed into scenario building. Scenarios are narratives of what the future might look like. They are typically built on a range of quantitative and qualitative data in a process that ensures coverage in the scenarios of the main drivers and uncertainties. The process can be used to integrate different types of information about the future. For example, forecasts based on robust historical data sets can be combined with 'weak signal' indicators of new potential drivers of change.

Scenarios are usually developed and analysed by a collective group of stakeholders. Box 4 describes a community-based scenario approach to integrating different data and perspectives which resulted in more informed decision making in the short term.

BOX 4 Participatory scenario approach: CARE International

CARE International is a global development and humanitarian organisation. As part of its international work on climate change resilience, it ran an adaptation learning programme (ALP) to support vulnerable communities in Africa to adapt to climate change.

The ALP developed a scenario planning method, called participatory scenario planning, and applied it across more than 10 African countries. The process was developed in response to the need for local community farmers to make decisions about what to plant and when in the context of climate uncertainty.

Many local farmers didn't trust scientific meteorological advice. The prescriptiveness of these climate forecasts could downplay uncertainty and be dismissive of local agricultural knowledge.

Participatory scenario planning was developed to bridge the divide between the different types of knowledge about the potential climate future.

At the start of each season stakeholders including local and meteorological climate experts were brought together at community forums. Scientific and local forecasts were both presented, then merged to create a common set of scenarios representing the risks and opportunities for farmers in the coming season. Using the scenarios, the group identified local strategies and actions that were published in information bulletins called 'advisory notices'. As well as being used by farmers, advisory notices have been used by governments and private organisations for planning and investment decisions.

Hundreds of people were trained in participatory scenario planning in each country and went on to train others in local communities.

Preferred futures (visioning)

Many future-focused approaches are based on exploring and describing multiple potential scenarios. But some approaches are based on developing a normative view of what the future could, or should, look like. Visioning is a collective exercise undertaken by decision-makers to develop a narrative of a single preferred future — for example, health and social care systems where people are meaningfully involved in the design of services. Defining a preferred future can help plan how today's decisions can contribute to achieving these long-term goals.

Futures in practice

Industry approaches

There are many reasons why organisations turn to future-orientated techniques. The life expectancy of companies has fallen since the 1980s.[170] In an unpredictable and changing world, organisations seek ways to identify and manage risks in their operating environment so that they can anticipate and weather change. Futures techniques can be used to evaluate and refocus an organisation's purpose. They can also support innovation by spotting future opportunities and allowing new approaches to be explored and tested.

There are various models for integrating futures thinking into an organisation. This ranges from one-off exercises to support a specific decision to permanent programmes of analysis that feed strategic planning. Capacity and capability for this work might be externally sourced or internally built, with variable proximity to decision making. Box 5 on page 38 describes how futures capability has been built within two international humanitarian organisations.

BOX 5 Organisational capacity for futures in the humanitarian sector

Futures approaches have become increasingly popular in the humanitarian and development sector. These organisations are facing substantial uncertainty in their operating environment, driven by geopolitical, environmental and technological change. UNICEF and the International Federation of Red Cross and Red Crescent Societies (IFRC) are two organisations concerned with responding to emergency and crisis that have developed standing capability for long-term thinking.

IFRC

IFRC is the world's largest humanitarian organisation, operating through 190 independent Red Cross and Red Crescent societies. In 2016 they set up a Global Futures and Innovation team to embed futures into strategy and planning. They work as part of an internal futures think tank (called the Solferino Academy) that undertakes horizon scanning, trends analysis and exploration of potential futures, while building capabilities in futures skills across the IFRC network.

The Futures and Innovation team led the design of IFRC's most recent global strategy — Strategy 2030.[171] They engaged with over 4,000 young people from 120 countries through an online exercise. Member organisations were also supported to run exercises in their own countries. Toolkits support the continued use of futures approaches throughout the organisation.

UNICEF

UNICEF, the humanitarian and development agency for children and mothers, operates in 190 countries. In 2014 they established a Policy Planning Unit to create capacity for long-term thinking. The unit focused on horizon scanning — using software to continuously monitor for emerging trends. Information was distilled and disseminated to inform decision making in UNICEF's headquarters, as well as member countries.

The unit has worked on a project called The Future of the Child, which explored the implications of major global trends for future children. Outputs have been used in member countries to develop local strategies. Cameroon, for example, used the trends to develop scenarios that were used to review their country programme.[172] The Policy Planning Unit also developed a toolkit for using futures methodologies with adolescents.[173]

Evidence on the impact of these processes in practice is thin — as is detailed information to understand and compare exactly what organisations do to prepare for the future in different contexts. Some studies have suggested a link between long-termism and business performance. One study of 83 multinational firms found that 'future preparedness' in 2008 was a predictor for becoming an outperformer in their industry in 2015.[173] Another study of 615 US companies found that those classified as being 'long-term' oriented outperformed their 'shorter term' peers on financial measures.[174] The factors affecting organisational performance, however, are wide ranging; attributing the value of long-term planning to changes in performance is extremely hard to do with any confidence.

‘Change is a constant challenge. Governments cannot foresee all the changes and unexpected shocks that will come, so flexibility, resilience and imagination are essential.’

— House of Commons Public Administration Select Committee

Government approaches

While governments have always sought to anticipate the future, the 'professionalisation' of futures thinking in governments has its origins in World War II and the post-war era.[175] At this time, the US military developed technical approaches, such as scenario development, to support military planning. Later, against the backdrop of the Cold War, other militaries in Western Europe and the USSR adopted these practices.

After the war, governments embarked on long-term social and economic planning as they sought to rebuild. In the 1960s and 1970s, macroeconomic forecasting techniques were adopted and underpinned national economic policy. Futures approaches were applied to science and technology strategies, as demand for technology grew and technological innovation became increasingly important for economic growth. Japan was a notable early adopter, administering large technology foresight Delphi exercises from 1971, inspiring similar exercises later in Germany.[176]

Science and technology policy has remained a core focus of government futures work. But in the last few decades these approaches have been applied more broadly, as complex and cross-cutting environmental and social policy challenges moved up the agenda. At the same time, futures again became tied to national security planning. Broad, long-term global trends exercises are conducted for militaries including the USA,[18] Canada[177] and the UK.[17]

Today, countries across the world have built government capacity for futures thinking by establishing dedicated units, programmes and structures (see Boxes 6-8 and Figure 8).[178] In some countries centralised planning exercises directly inform national policy (eg Germany). In others, analysis feeds into policymaking via councils or committees (eg Finland and Estonia). Futures capacity and capability can also be centralised in specialist units that work across government departments (eg Canada), or dispersed through departments and regional governments (eg the USA).

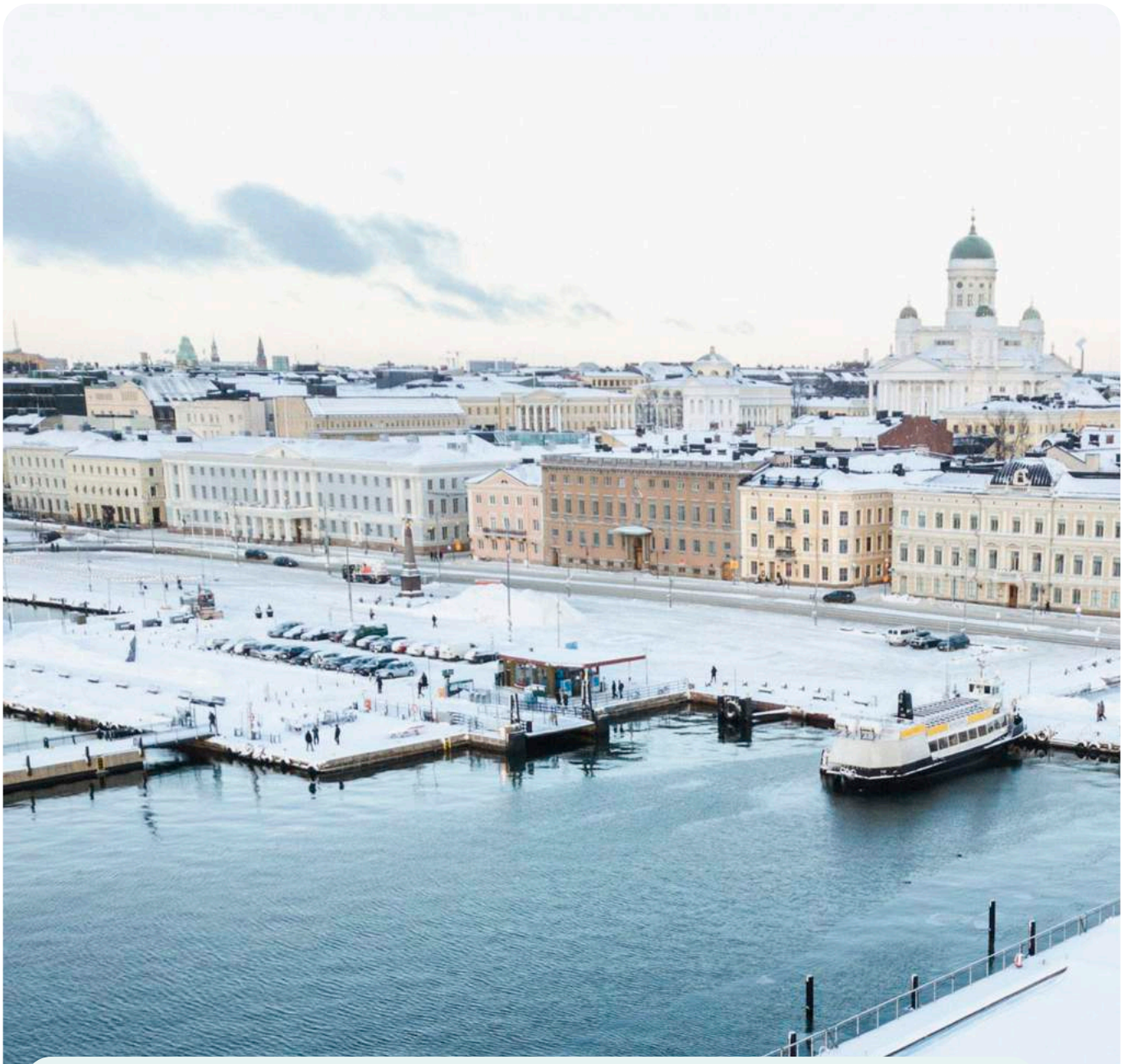
Government programmes are complemented by international collaborations. Australia and New Zealand share a horizon scanning service.[179] The Asia-Pacific Economic Cooperation forum has a Centre for Technology Foresight.[180] The OECD has built futures capabilities to inform its own policymaking and that of its members.[181] The EU has futures programmes within the European Commission[182] and European Parliament,[183] and supports networks of experts and institutions.[184] WHO Europe leads a Foresight Group on the future of health systems.

It is difficult to provide a comprehensive picture of government futures activity. It comes under various names: futures, foresight, forecasting, long-term planning, and so on. Public information about central futures institutions is more readily available than the long-term strategic planning that takes place in individual departments and regional arrangements. Figure 8 illustrates some different examples of these kinds of arrangements globally, but this is far from a complete overview. Most importantly, it is difficult to assess the extent to which this future-focused work in government is actually integrated into decision making.

BOX 6 Singapore

Long-term planning is core to Singapore's approach to policymaking. As a small nation with limited natural resources it is particularly vulnerable to external events. When Singapore gained independence in 1965 its leaders responded to these vulnerabilities by developing long-term plans for economic and environmental sustainability. A focus on future preparedness has remained ever since: 'anticipate change, stay relevant' is one of the principles of governance.[186]

Singapore first used scenario planning for defence and security in the 1980s, inspired by the practices of Royal Dutch Shell. The method was institutionalised through a dedicated scenario planning function, first in the Ministry of Defence and later transferred to the Prime Minister's Office. Methodology developed and expanded through the 1990s and 2000s. Alongside scenario planning, new tools and capacity were developed to scan the environment for signs of future shocks. Today there are several government institutions for futures: a central agency for whole-government scanning called the Horizon Scanning Centre; the Centre for Strategic Futures — a centre for developing futures methods and capabilities; and a Strategic Policy Office that runs national-level scenario planning exercises. Futures thinking is institutionalised across ministries. Civil servants are trained in the techniques, use a common glossary of futures language, and activity is promoted and coordinated through intra-agency networks and platforms.



BOX 7 Finland

In the Finnish government, futures activity is coordinated and connected with the policymaking process through the Prime Minister's Office.[187] It also takes place across ministries and branches of government. This is complemented and coordinated with work conducted in education institutions and business.

Once in a government term the Prime Minister's Office submits a 'Report on the future' to parliament. The report pulls together future reviews drawn up by individual ministries and presents the strategic policy issues 10 to 20 years ahead. The Prime Minister's Office, in partnership with Sitra (the Finnish Innovation Fund) also coordinates a National Foresight Network, promoting foresight and encouraging collaboration across public and private sector organisations.

The Finnish parliament has a 17-member Committee on the Future (established in 1993). Members promote dialogue on long-term issues and opportunities and, once a term, prepare parliament's response to the report on the future.

BOX 8 Japan

Japan has run a national foresight exercise for science and technology approximately every five years since 1971, using the Delphi technique to identify science and technology strategic priorities.[188]

The Delphi exercise is managed by the National Institute of Science and Technology Policy, a research institute under the Ministry of Education, Culture, Sports, Science and Technology. The results of each exercise feed into the government's science and technology 'Basic Plan', produced every five years to outline the research fields of strategic importance.

Japan's methodology has evolved over the years. More recent rounds have combined Delphi with other methods such as scenarios and horizon scanning. The scope of the exercise has also broadened to consider societal 'demand' drivers of technological innovation alongside technology 'supply'. The method has also been adapted to promote greater multidisciplinary discussion.

Figure 8 Government futures institutions

SWEDEN

The **Secretariat for Strategic Development** supports the Minister for Strategic Development. It focuses on long-term, cross-sector issues to support the development of ideas and policies that are future-oriented.[189]

CANADA

Policy Horizons Canada is a federal-government-owned organisation that works across departments to support the development of future-oriented policy and programmes.[193]

USA

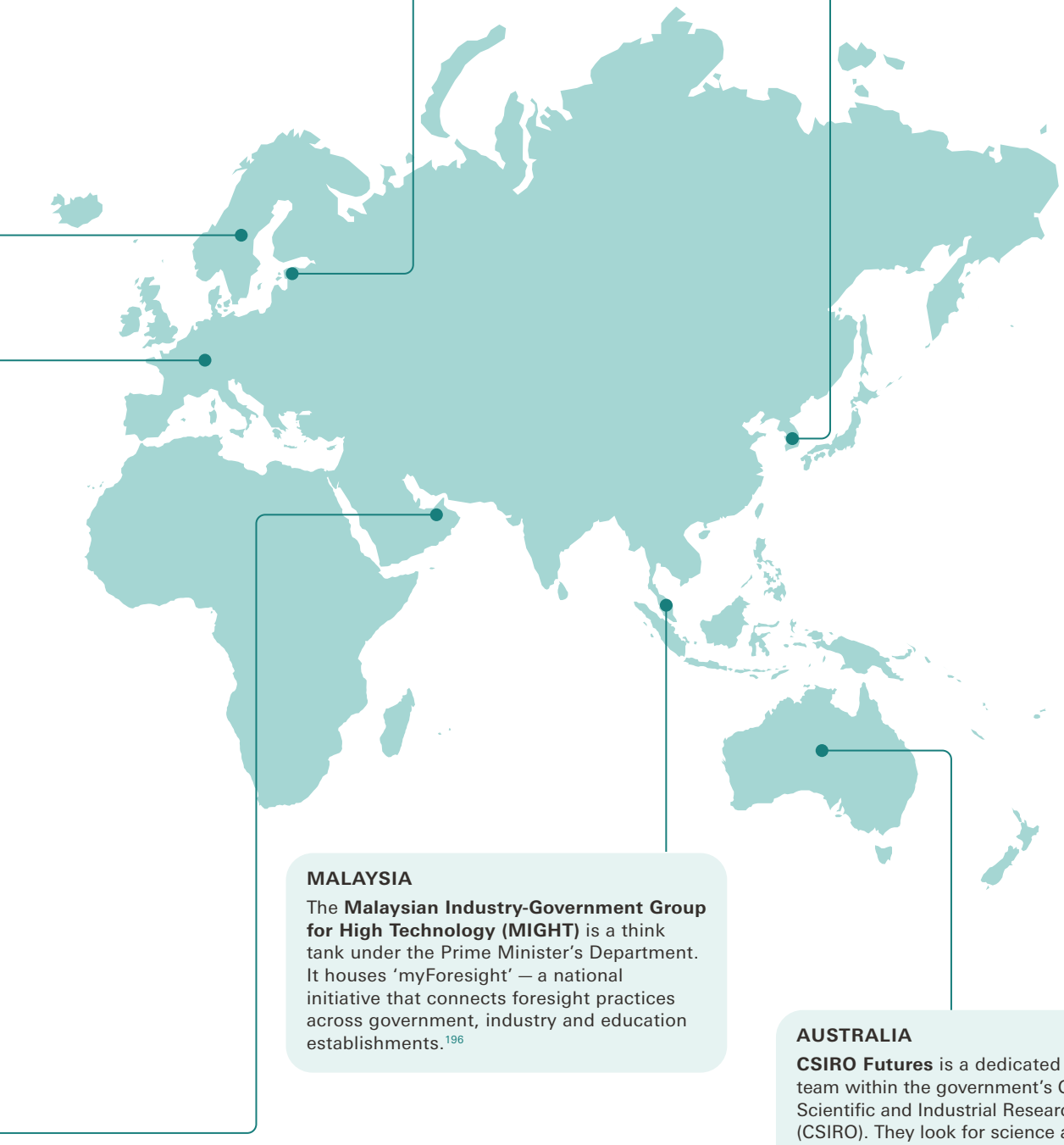
The **Federal Foresight Community of Interest** was established by the Department of Veterans Affairs. It is open to federal employees who work in foresight-related areas as a forum to share best practices and promote cross-agency connection.[192]

GERMANY

The **Federal Ministry of Education and Research** implements a cyclical Foresight Process for looking 15 years ahead to inform research and innovation policy.[191]

UAE

The **Ministry of Cabinet Affairs and the Future (est 2006)** is mandated with the portfolio of the future of the UAE. It oversees the 'UAE Future Foresight Strategy'.[194]



SOUTH KOREA

National Assembly Futures Institute is a think tank for long-term national strategies. It sits under the national legislature, independent from political parties and electoral terms.[197]

ESTONIA

The **Foresight Centre** is a think tank at the Estonian Parliament. It is overseen by the **Foresight Council** — an independent expert body that monitors plans and activities as well as giving ideas for future studies.[190]

MALAYSIA

The **Malaysian Industry-Government Group for High Technology (MIGHT)** is a think tank under the Prime Minister's Department. It houses 'myForesight' — a national initiative that connects foresight practices across government, industry and education establishments.[196]

AUSTRALIA

CSIRO Futures is a dedicated futures team within the government's Commonwealth Scientific and Industrial Research Organisation (CSIRO). They look for science and technology trends and changes to help government and industry prepare for the future.[195]

Futures in UK government

The UK government has a long history of building institutional capacity to support the integration of long-term thinking into policymaking. The practice of horizon scanning, for example, dates back to the 1900s, when the Committee for Imperial Defence was set up to support military planning by scanning for undesirable global developments.[198] In 1959 Harold Macmillan commissioned a study to look a decade into the future and assess Britain's global standing. The findings of this Future Policy Study were subsequently pulled from full cabinet discussion because its outlook was so bleak.[199]

In 1961 the Policy Planning Staff was created at the Foreign and Commonwealth Office, building on the US model of the same name, established at the State Department in 1947 to provide independent policy analysis and to take a long-term view. This was followed in 1971 by Prime Minister Edward Health's Central Policy Review Staff at the Cabinet Office — a unit tasked with focusing on long-term and cross-cutting issues.

In 1994 the dedicated futures programme Foresight was launched at the Government Office for Science and Technology (GO-Science), following the recommendation of the 1993 *Realising our potential: a strategy for science, engineering and technology* white paper.[200] Foresight advises government, undertaking major studies and shorter projects on issues where scientific evidence and futures analysis can be combined to inform long-term policymaking (see Box 10).

Capability for systematically looking at the future increased at the turn of the millennium. The Prime Minister's Strategy Unit (PMSU), introduced under Tony Blair in 2001, created a central capacity for long-term strategy. In the same year, the Ministry of Defence's (MoD) think tank, the Development, Concepts and Doctrine Centre (DCDC), published *Global Strategic Trends*, the first in its series of reports that set out the global strategic context for UK government (see Box 9).

BOX 9 MoD's Global Strategic Trends

The first edition of Global Strategic Trends was published in 2001. Subsequent editions were published in 2002, and every four years after. The reports describe the long-term trends and strategic context for the MoD and wider government policymaking. To produce the report, DCDC gathers analysis from other government departments, as well as other countries, industry, and academia. The 2018 edition, *The future starts today*, demonstrates the broadening of MoD's considerations from national security-focused issues to wider socioeconomic issues.

The 2000 Local Government Act included a statutory requirement for local authorities to develop a 20-year community strategy to promote and improve the economic, social and environmental wellbeing of their areas.

Futures work has also been developed in the devolved administrations of Scotland and Wales. The Scottish Parliament established a futures think tank, Futures Forum, in 2005. In 2015, the Welsh Assembly passed the Well-being of Future Generations (Wales) Act, placing statutory duties on public bodies to consider long-term sustainability (see Box 11).

BOX 10 UK Foresight programme

The Foresight programme was launched in 1994 at the Government Office for Science and Technology, part of what was then the Department for Trade and Industry. It was established to improve the UK's standing in science, engineering and technology and its early years were focused on identifying opportunities for economic growth.

Since the early 2000s its work has broadened in scope to include wider societal policy issues and themes. In 2007 it published *Tackling obesities: future choices* with the Department of Health, setting out a long-term vision for addressing obesity (see Box 13). More recently it has published reports including *Future of an ageing population* (2016)[201] and *Future of the sea* (2018).[202]

In 2005 the Horizon Scanning Centre was created within the Foresight Programme to strengthen futures thinking capacity and networks across government. It was later to merge with the Cabinet Office's Horizon Scanning Secretariat and become the Horizon Scanning Programme team in 2014.

BOX 11 Legislative basis for long-term decision making

One approach to embedding long-term thinking in public services is through placing legal duties on government and public bodies to promote wellbeing and sustainability.

As part of a wider drive to empower local communities, the Sustainable Communities Act allows local authorities, in consultation with local people, to make proposals to central government to improve the economic, social and environmental wellbeing of their area.[203]

Under the Climate Change Act (2008), the government has a legal duty to cut emissions by 80% below 1990 levels by 2050.[204] The Act provides the legal framework for policies to supports the transition to a low-carbon economy, and to mitigate and adapt. The devolved administrations have separate climate policies. The Scottish government has committed to a more ambitious target of a 90% reduction by 2050. Scotland also places duties on public bodies to contribute to emission reduction and adaptation, and to annually report on compliance with climate change duties.[205]

In England, health and wellbeing boards (established through the 2012 Health and Social Care Act) have a statutory duty to promote the health and wellbeing of a local area and reduce health inequalities. Local authorities and clinical commissioning groups are required to jointly develop health and wellbeing strategies that meet the current and future health and social care needs of their local population.[206]

The Public Services (Social Value) Act 2013 requires all public bodies in England and Wales to consider how the services they commission and procure might improve the economic, social and environmental wellbeing of the area. The act encourages commissioners to consider a wider set of factors and longer-term implications when awarding contracts, beyond costs. However, a review of the act found that incorporation of social value in actual procurements appeared to be relatively low.[207] There are calls for the act to be strengthened,[208] and plans for new measures so that central government procurement too should take social and economic benefits into account.[209]

In 2015 the Welsh Assembly passed the Well-being of Future Generations (Wales) Act requiring public bodies to 'ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.'[210] The act is the first of its kind to enshrine in law a duty on public bodies to safeguard the wellbeing of future generations. Public bodies must work towards seven 'well-being goals' and set and publish objectives showing how they will be achieved. Progress towards the goals is measured against 46 national indicators. An Office of the Future Generations Commissioner was established to promote the act, support and challenge public bodies, and review progress.

A review by the Wales Audit Office a year after the act was introduced found that public bodies were changing how they worked in response to the act, and many were supportive. It argued that continued and systematic application of the act is needed to fully deliver on its ambition.[211]

The development of futures work in the UK government has not been linear (Figure 10). The Prime Minister's Strategy Unit was disbanded in 2010, and there is currently no equivalent unit for the development of cross-government long-term strategy in Whitehall.

Today, there are three main centres of futures thinking and practice in central government:

- the Ministry of Defence
- GO-Science, working with the Cabinet Office
- the Cabinet Office, which owns the government's cross-cutting horizon scanning.

Work undertaken by other departments, devolved governments, local authorities, and public agencies and services complements these efforts. As central government devolves power and responsibilities, there has been increasing scope for cities to define their own future. Some cities have developed long-term plans, including 'One Planet Cardiff 2050' (developed in 2010) and 'Glasgow 2061' (2011). More recently, the Foresight programme has supported multiple city-level projects including Newcastle's 'City Futures 2065' (2014).[212]

Horizon scanning and other future-focused work also happen within the health and social care system. For example, strategy teams within NHS England, the Care Quality Commission, Health Education England and other arm's-length bodies all have ongoing work to scan emerging developments and assess long-term trends related to health. The Department of Health and Social Care recently created NHSX to lead on digital transformation in the NHS. And NHS England and Public Health England's Sustainable Development Unit promotes environmental sustainability across the NHS, public health and social care. Analysis of future workforce needs, financial pressures and service models is also undertaken at a local level — by trusts, clinical commissioning groups, sustainability and transformation partnerships, and others. Yet this work is often fragmented between different parts of the system. The bigger challenge is using these insights in day-to-day decision making. Too often, short-term pressures crowd out space for thinking about the long term.

BOX 12 Foresight: Tackling Obesities: Future Choices 2007

Tackling Obesities: Future Choices set out to answer the question: 'How can we deliver a sustainable response to obesity over the next 40 years?' An extensive project of evidence and analysis was undertaken involving over 300 experts. This included:

- reviewing evidence into the causes of obesity and the effectiveness of interventions to address it.
- developing a system map of the causes of obesity with experts across disciplines. It demonstrated the complex interplay of drivers of weight gain — both individual and environmental (Figure 9).
- quantitative modelling of how obesity could develop up to 2050, including the associated impacts on health outcomes and health care costs. The simulations allowed for the comparison of the impact of potential policy approaches, for example, the difference between universal and targeted strategies.
- scenario development of possible futures looking to 2050. The potential impact of policy interventions was explored within these.

Tackling Obesities set out a long-term vision and core principles for a sustainable response to obesity that reframed the debate. Shifting the balance of responsibility from the individual towards recognition of obesity's multiple causes at individual and societal levels, it emphasised the importance of a system-wide approach, focusing on prevention, and the need for a collective response across government, and beyond.

Shortly after, in 2008, the first cross-government strategy for obesity, *Healthy Weight, Healthy Lives*, was published as the government's response to *Tackling Obesities*,[213] followed in 2011 by the white paper, *Healthy People, Healthy Lives*, which also drew on Foresight's evidence.

Public Health England's 2015 report, *Sugar reduction: the evidence for action*,[214] again cited evidence from Foresight's report, among others, to recommend action on environmental drivers of obesity, including applying a levy on high sugar products. The government drew on Public Health England's recommendations in the 2016 report *Childhood obesity — a plan for action*, setting out the Soft Drinks Industry Levy and a sugar-reduction programme.[215]

Tackling Obesities has also influenced local policymaking. In 2016 Public Health England commissioned the Whole Systems Approach to Obesity programme to help local authorities respond to complex multiple drivers of obesity in their communities. The programme explicitly draws on the systems approach introduced by Foresight's report.[216]

Figure 9: Obesity system map. Source: GO-Science

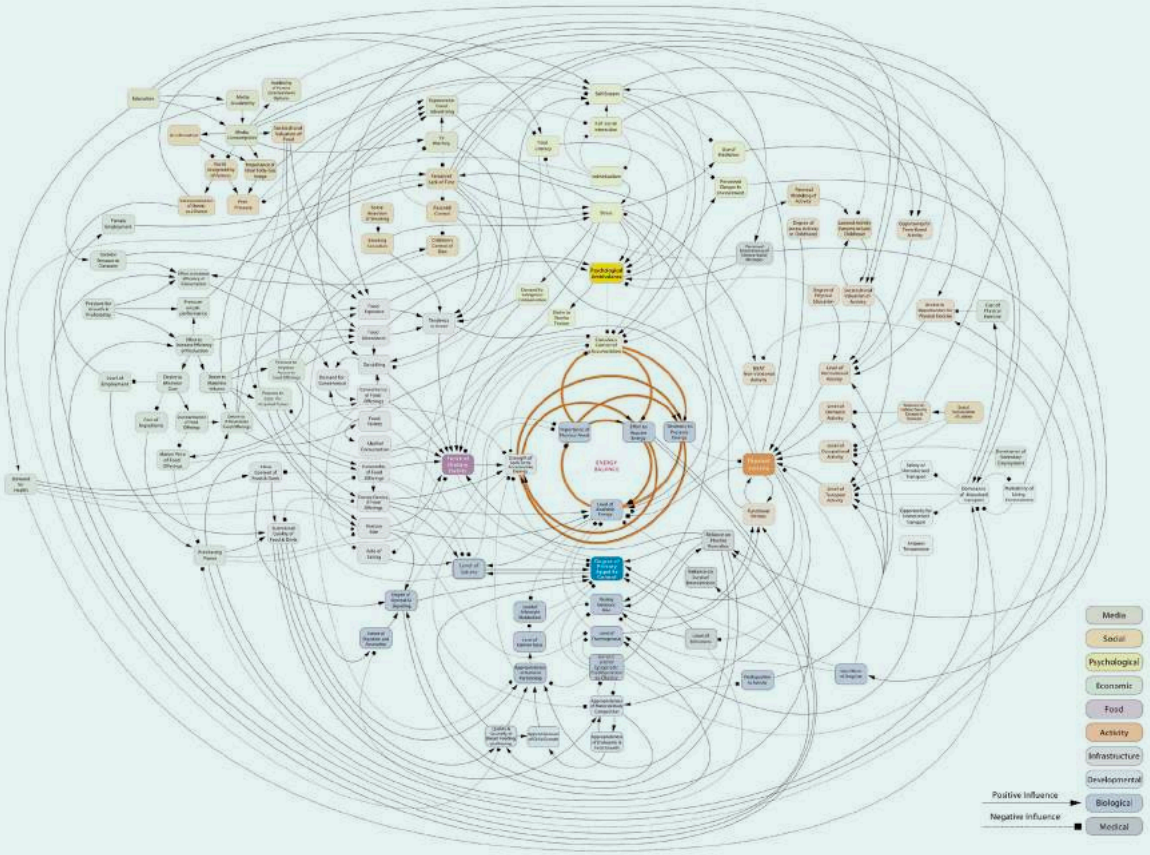
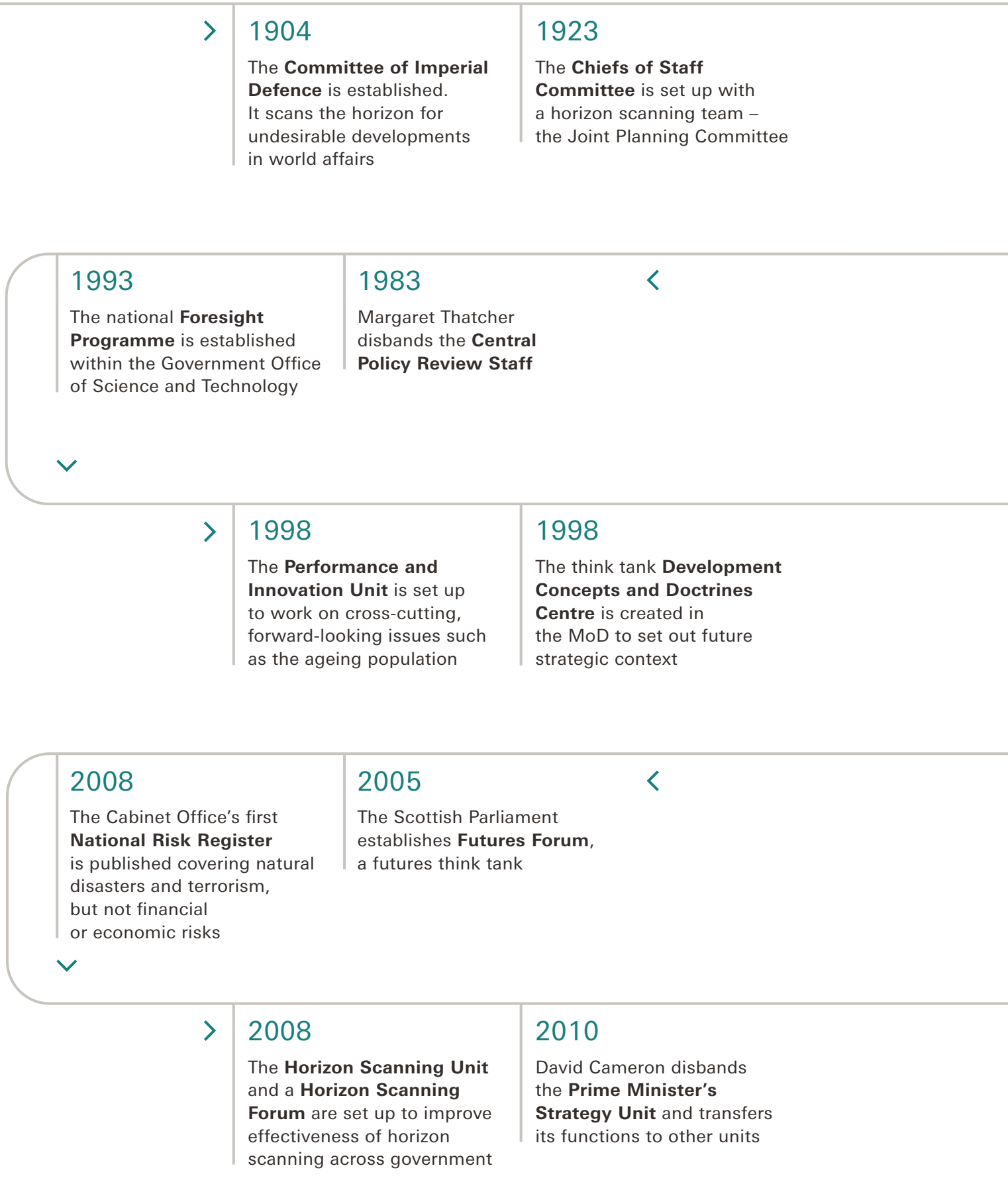


Figure 10: History of futures in the UK government



1942

The **Beveridge Report** sets out a long-term vision for post-war reconstruction

1959

Harold Macmillan commissions the **Future Policy Study**, a secret horizon scan looking ahead to 1970s Britain

1961

The strategy unit **Policy Planning Staff** is set up at the Foreign and Commonwealth Office

1971

The think tank **Central Policy Review Staff** is set up in the Cabinet Office to provide long-term strategic policy advice

2000

The **Local Government Act** includes a statutory requirement for local authorities to develop a 20-year community strategy

2001

The MoD publishes its first **Global Strategic Trends** report. Subsequent editions are published in 2002, and every four years after

2002

The **Prime Minister's Strategy Unit** is set up to improve the government's capacity to address long-term and cross-cutting strategic issues

2005

The **Horizon Scanning Centre** is created within the Foresight Programme to support futures work across government

2013

A cross-government **Horizon Scanning Programme** is formed in the Cabinet Office to better embed horizon scanning in policymaking

2015

The **Well-being of Future Generations (Wales) Act** is passed, requiring public bodies to think about the long term impact of decisions

Integrating insights

This section has described some of the future-focused approaches used to inform strategic planning and policy in the UK and elsewhere. The fact that governments and organisations invest in these efforts — albeit to different degrees — suggests that they find them useful to support decision making. The value of these approaches, however, is inherently difficult to measure. Benefits may not be realised for many years. And attributing changes in outcomes to the work of foresight teams or their methods is extremely difficult to do. Despite this, there are good reasons to assume that drawing on a wide range of data about trends and issues, integrating diverse perspectives, seeking to understand complexity, and considering multiple potential futures could — if done well — make policymaking more effective. The question is, how much? Carrying out future-focused work is one thing. The bigger challenge is likely to be integrating insights from this kind of analysis into decision making — particularly given political realities and short-term pressures.

Where next?

The idea that policymakers should plan and prepare more for the long term is nothing new. The more difficult question is to what extent this should be done and how this thinking can be used to help today's leaders make more effective decisions — particularly at a time when demand for health and social care services is growing faster than resources, and wider public services are creaking under the pressure of a decade of austerity. These issues create a paradox for policymakers: today's pressures illustrate the importance of planning for the long term, yet they simultaneously make it more difficult to create the space to do so.

In this report, we have identified some of the big issues facing health and social care in the UK now and in the future — including changes in the population's health, society, technology, politics and other areas. We have emphasised the complexity of these issues and the interactions between them. As well as responding to emerging issues, the actions of policymakers and their strategists will shape the way these issues evolve and develop in the future — for better or for worse.

We have also described some of the methods and approaches that have been used to help identify and respond to future issues in the public and private sector — from scenario planning, to engaging a wide range of voices in identifying issues for the future, to introducing new legislation to help ensure that policymakers consider the potential long-term impacts of today's policy decisions. The UK government has a long — though not consistent — history of using these kinds of approaches to consider future issues, as does the NHS. The Sustainable Development Unit, for example, was established in 2008 to support environmentally sustainable development in the NHS, public health and social care systems in England — for example, by helping them reduce emissions and promote a healthier environment.

Yet — as we described in the introduction — short-term issues often dominate in health and social care, and time available to make decisions is often too short to take a wider view on the issue at hand. Even when the system sets out to take a long-term view, good intentions can get derailed by short-term pressures, such as tackling financial deficits in the NHS.[217]

So how can the health and social care system improve the way it plans for the future? Is better and more easily accessible information needed about the issues and trends that could shape the future of health and social care? Are more diverse voices needed to interpret these changes, and how they might interact? Is more work needed to translate information about the future into tangible policy actions? Or is the problem less about information and ideas and more about the context for decision making?

To help explore answers to these questions, the Health Foundation is starting a new programme of work looking at some of the long-term issues shaping health and social care in the UK, and what they mean for policy and decision making. Our aims are to:

- provide new thinking and analysis on some of the key issues shaping health and health services over the next 10–25 years, particularly in areas where current understanding of what these issues mean for policy is limited

- support health policymakers to prepare better for the future — both individually and collectively — by incorporating thinking on these issues and the choices they present more effectively into today's plans and policy decisions

- test the methods and approaches that can be used to do this — including by exploring how analysis on long-term issues could be better integrated into health policymaking in an ongoing and sustainable way.

The Shaping Health Futures programme is just one part of the Health Foundation's wider commitment to securing the long-term sustainability of health and social care services in the UK. The programme is being developed alongside a new Sustainability Research Centre, which will provide independent projections, research and analysis on factors driving health system supply and demand, based on detailed quantitative modelling. Taken together, we believe that this work has the potential to support health and social care leaders to create a more sustainable system fit for the future — a system with foresight rather than hindsight.

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