Fit for the Future
Scenarios for low-carbon healthcare 2030

September 2009
Acknowledgements

Many thanks to the following who gave time to participate in developing these scenarios, both through workshops and interviews:

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Fit for the Future explores scenarios for the healthcare system in England in 2030. It was commissioned by the NHS Sustainable Development Unit to help healthcare organisations think about the medium- and long-term future, and understand and prepare for their role.

The report concludes that a low-carbon NHS is a more efficient NHS and, if the service is to provide the best possible quality of healthcare in the future, it must build both its efforts to mitigate climate change and its resilience to that change. This requires investing in the future and getting it right. Climate change is the biggest global health threat of the 21st century.

Fit for the Future recommends five key steps to creating a sustainable low-carbon healthcare system, which is prepared for whatever the future holds. (See section five of the report for full details.)

1. Support people in taking responsibility for their own health
2. Build greater acceptance of ICT in healthcare provision
3. Work to find the low-carbon / high quality of life sweet spot
4. Allocate measures to promote health rather than treat illness
5. Ensure the healthcare system takes a leadership role in the radical change we need to face climate change

2 Based on 2006/2007 figures.
3 NHS currently spends 4% of its income from taxpayers on prevention and public health. (See section five of the report for full details.)
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Fit for the Future recommends five key steps to creating a sustainable low-carbon healthcare system, which is prepared for whatever the future holds. (See section five of the report for full details.)

1. **Support people in taking responsibility for their own health**
   In the context of declining budgets and the need for greater resource efficiency, the burden of responsibility for health is likely to shift back towards individuals in most plausible futures. Improving the health literacy of the population will help refocus the system on prevention. Enabling communities to play a role in healthcare provision could free up resources for acute care provision.

2. **Build greater acceptance of ICT in healthcare provision**
   Higher carbon prices will make transport and carbon intensive facilities prohibitively expensive, and so information and communication technology (ICT) will play a major role in the future delivery of healthcare. Many of the technologies of tele-healthcare already exist, but are not yet widely accepted either by patients or clinicians. A cultural change in the system is needed to make the most of the benefits these systems offer.

3. **Work to find the low-carbon / high quality of life sweet spot**
   Carbon-intense lifestyles have been bad for the environment and health in almost equal measure. So-called ‘diseases of affluence’ have almost overwhelmed the healthcare system. The NHS is in a prime position to take a leadership role in showing that low-carbon lifestyles can have a positive impact on our health. By working with local partners, it can help find the low-carbon sweet spot where lower carbon lifestyles are also happier, healthier lives.

4. **Allocate resources to promote health rather than treat illness**
   High carbon prices will put pressure on public spending, so that even after the current economic crisis is over, downward pressure on health service budgets will continue. The NHS currently spends 4% of its income from taxpayers on prevention and public health.\(^2\) Building this figure to 20% will save money and help future-proof services against long-term reduction in budgets.

5. **Ensure the healthcare system takes a leadership role in the radical change we need to face climate change**
   As the climate changes, business-as-usual is not an option for any organisation within society. Breaking our dependency on fossil fuels for energy will lead to dramatic changes in everyone’s lifestyle. The NHS, with its massive size and reach, could have a great influence on the rest of society by taking the lead on carbon reduction and climate resilience; taking climate change seriously comes close to being a duty of care for the service. But it will

\(^1\) The Lancet, volume 373, issue 9676, pages 1693-1733, 16 May 2009.
\(^2\) Based on 2006/2007 figures.
require a shift of philosophy and a cultural transformation within the organisation so that staff at all levels accept the likelihood of radical change. If the NHS embraces this new world then the response to climate change can become a great opportunity, not only for the service but also for public health.

The scenarios
The four scenarios for the future of the healthcare system are based on Climate Futures, a study published by Forum for the Future at the end of 2008, which analysed the social, political, economic and psychological consequences of climate change. Fit for the Future ––– to refine four scenarios for 2030, and to explore their implications for the healthcare system. These factors have been used in workshops and interviews with health sector experts –– including NHS chief executives, senior clinicians and public health practitioners –– to refine our scenarios for 2030, and to explore their implications for the healthcare system.

The scenarios and their implications are presented in section four, where each is also explored from the perspective of a person managing diabetes.

Service Transformation — The high price of carbon has created a new type of consumer world, where businesses sell services rather than products and good citizens share with their neighbours. Communities work together to support healthy lifestyles and businesses take increasing responsibility for promoting public health. But remote rural areas have the highest emissions per head as under served.

- Car ownership is unaffordable, but rent-a-car and rent-a-bike schemes are booming.
- Vegetarianism and healthy lifestyles are the norm, but libertarians are demanding an end to taxes on fatty foods.
- Some doctors avoid prescribing carbon-intensive treatments causing huge controversy. A 'rent-pour-organ' scheme offers people lifetime care and advice in return for giving up organs for transplant at the end of their life.

Efficiency First — Rapid innovation and novel technologies have created a low-carbon economy with little need for changes in lifestyle or business practice. This is an increasingly individualistic, consumerist, fast-moving world. The private sector plays a growing role in healthcare and highly personalised, fast - Moving medicine is available,

- Meat production has been phased out because of its high-carbon cost. The mid-2020s have become meatless years.
- Some doctors avoid prescribing carbon-intensive treatments causing huge controversy. A 'rent-pour-organ' scheme offers people lifetime care and advice in return for giving up organs for transplant at the end of their life.
- Vegetarianism and healthy lifestyles are the norm, but libertarians are demanding an end to taxes on fatty foods.
- People are used to online appointments with virtual doctors, and robot surgeons are seen as normal. Diagnostic T-shirts allow people to track their health; commercial monitoring services are much reduced from 2009.

Healthcare and Public Health — The high price of carbon has created a new type of consumer world, where businesses sell services rather than products and good citizens share with their neighbours. Communities work together to support healthy lifestyles and businesses take increasing responsibility for promoting public health. But remote rural areas have the highest emissions per head as under served.

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Redefining Progress — Countries prioritise economic and social resilience over growth, and quality of life is the key goal. People value meaningful work, low-impact lifestyles and their community. Existing lifestyles are high growth, and much care is delivered through friends, families and charities. Workplace health schemes are common.

- Health groups have replaced book groups as a popular activity, and many meet online.
- Tobacco, alcohol and actually food are highly taxed and society frowns on people who don’t look after their health. Some organ donors refuse donations to these people.
- Longer lifestyles have led to baby boom, putting pressure on carbon reduction targets.
- Pressure for an open intellectual property regime caused the collapse of the pharmaceutical industry; drugs companies are now run by the World Health Organisation.

Environmental War Economy — This is a world which woke up late to climate change. Governments enforced tough action to make up for lost time, rethinking their macro economies as times of war at the expense of many civil liberties. All resources are focused on tackling climate change. Public services are focused on absolute necessity and all services are much reduced from 2009.

- Meat production has been phased out because of its high-carbon cost. The mid-2020s have become meatless years.
- Some doctors avoid prescribing carbon-intensive treatments causing huge controversy. A ‘rent-pour-organ’ scheme offers people lifetime care and advice in return for giving up organs for transplant at the end of their life.
- Vegetarianism and healthy lifestyles are the norm, but libertarians are demanding an end to taxes on fatty foods.
- Preventive illness is viewed as efficient. Compulsory mass immunisation programmes move from street to street, vaccinating against malaria, flu and other diseases.
- The NHS uses carbon rationing to decide what treatments to give. Mobile services are much reduced from 2009.

Using the scenarios to plan for the future
These scenarios are plausible scenarios of possible futures, not predictions. The future is inherently uncertain, but we do know that it is likely to be very different from today. Environmental change, technological developments, economic growth or recession, will all lead us in new and unexpected directions. Exploring what could happen using scenarios — in effect, asking ‘What If? ...’ — helps us to prepare for that change. The aim of Fit for the Future is to encourage people with a stake in the future of healthcare to think and plan for radical change, and offer some starting points for a discussion. To that end, some suggestions on ‘how to use this report’ are set out at section six.
**Redefining Progress** — Countries prioritise economic and social resilience over growth, and quality of life is the key goal. People value meaningful work, low-impact lifestyles and their community. Healthy living is a high priority, and much care is delivered through friends, families and charities. Workplace health schemes are common.

- Health groups have replaced book groups as a popular activity, and many meet online.
- Tobacco, alcohol and unhealthy food are highly taxed and society frowns on people who don’t look after their health. Some organ donors refuse donations to these people.
- Slower lifestyles have led to a baby boom, putting pressure on carbon reduction targets.
- Pressure for an open intellectual property regime caused the collapse of the pharmaceutical industry; drugs companies are now run by the World Health Organization.

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- Meat production has been phased out because of its high carbon cost. The mid-2020s are remembered fondly for the glut of cheap meat as farmers reduced their herds.
- The national diet is much healthier — UK-grown, seasonal and largely vegetarian. Carbon tax has stopped food imports and the government delivers a weekly ration to homes.
- Prevention illness is viewed as efficient. Compulsory mass immunisation programmes move from street to street, vaccinating against malaria, flu and other diseases.
- The NHS uses carbon rationing to decide what treatments to give. Mobile services treat people at home if this will have a lower impact.

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3. Factors shaping the future

How humanity responds to climate change between now and 2030 depends on a bewildering array of factors and the interactions between them. To understand the scenarios in section four, it helps to have an understanding of the factors that have been used to develop them.

For Climate Futures, Forum for the Future interviewed a range of experts from around the world — including top scientists, business leaders, activist and commentators — about their hopes, fears and expectations for the future. This research yielded the factors listed in seven areas below. New research for Fit for the Future identified additional factors which will drive developments in health and healthcare over the next 20 years, which we also set out below in more detail. These new factors were applied to the Climate Futures scenarios to understand how health and healthcare might develop.

The direct impacts of climate change
The way the climate changes in coming years will be critical in shaping our future. But because of the time lag in impacts of present and past emissions on the climate, most of the climate change that we will experience in 2030 is the result of past pollution. Action taken between now and 2030 will do little to alter the way the climate changes, though it will of course influence the resilience of our society.

For that reason there is little difference in the amount of climate change that the world has experienced in each of our scenarios. We have used the upper end of the 2007 Intergovernmental Panel on Climate Change estimates (IPCC, 4th Assessment Report, 2007) for the climate in 2030, as the latest science suggests that the lower end of these estimates is looking increasingly unlikely.

The changes to the climate that the world experiences after 2030 will be radically different in each scenario as they will depend on the political responses to carbon reduction that are put in place in the next 20 years.

This is one reason why, in our scenarios, we have not also dwelt on the new illnesses that we might see in the UK in 2030 as a result of changes to our climate.

Insofar as there are different ranges of morbidities, we see these as being more connected with other political factors (such as diseases brought by refugees in ‘Environmental War Economy’) than by changes to mean temperature, which will be the same across the different scenarios.

Public attitudes to climate change
The public perception of climate change will play an important role in the political responses that we see around the world.

A key question is the degree to which people are willing to make lifestyle choices that reduce consumption in the light of environmental pressures. Could we see a value shift away from consumption and onto considerations of wellbeing and quality of life?

In ‘Redefining Progress’ we see a world in which there has been such a shift in values, compared with ‘Efficiency First’ where a technological response to climate change allows...
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Public attitudes to climate change

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In ‘Redefining Progress’ we see a world in which there has been such a shift in values.

### Resources

Availability of resources such as energy, water and food will be crucial in the years to come. Whilst the distribution and availability of resources, political control of supplies is crucial.

It’s not clear what the energy mix in the UK will be in 2030: our scenarios reflect a range of differences — with big technological solutions in ‘Efficiency First’ compared with more localised energy provision in ‘Redefining Progress’.

### The nature of the global economy

The degree of international co-operation and transformation of the global economy in the run-up to 2030 are hugely important factors in how the global response to climate change shapes up.

As noted above, a low degree of international co-operation in the coming years could push us towards the situation depicted in ‘Environmental War Economy’, whereas a high degree of international co-operation and transformation of the global economy would be more likely in a world shown in ‘Service Transformation’.

### The political response, at a national and international level

The response of political leaders around the world to climate change is crucial. Political priorities change in different times and places, but most important is how climate change competes with, or reinforces, other priorities.

Whether states go for marketed responses or incentives will have a big impact on the sort of responses we have from business. Working with the markets could lead to harnessing incentives that deliver transformation from businesses such as those seen in ‘Service Transformation’.

Which technologies are developed and used

We can’t predict which technologies will be important in 2030, though the probability is that they will be ones already in existence albeit used in a different way. We’ve seen in the last 25 years, for example, how the internet has gone from being a military application, to being a big part of our day to day lives. The same kind of change in the technologies that we use will happen in energy.

More draconian approaches to carbon reduction, necessitated by an early lack of political co-operation, could lead to more of a war-like response seen in ‘Environmental War Economy’.

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More draconian approaches to carbon reduction, necessitated by an early lack of political co-operation, could lead to more of a war-like response seen in ‘Environmental War Economy’.
Our four scenarios show how health and healthcare in England could be very different in 2030. Adapting the Climate Futures scenarios on which they were based was done in a four-phase process:

1. Background research
2. Scenarios development
3. Consultation
4. Workshops

After the workshop we took the results and used these, alongside the interview findings, to develop draft scenarios. We brought these to the second workshop for testing with participants, asking them to build on the scenarios and think about the implications for the NHS.

Consultation
After the second workshop we took the results and fed them into a second draft of the scenarios. We invited all the workshop participants and interviewees to be part of a final consultation on the finished scenarios, and incorporated the feedback from that process in the scenarios shared here.

Structure of the scenarios
The scenarios all follow the same structure. First, they explore the wider picture — what is the global context, what is the national political, social and economic backdrop? They then go on to address the four broad areas that our research and workshops told us were important in determining people’s health and the health system.

1. What are the factors influencing the causes of illness and death?
2. How has technology developed?
3. How do society allocate responsibility for healthcare?
4. What do ‘services for the public good’ look like?

The full list of questions is shown in the appendix.

Factors in health and healthcare
Our research highlighted that the factors that will influence how healthcare develops and the health issues of the future. We grouped these under four headings that can be seen in each of the scenarios.

What are the factors influencing the causes of illness and death?
What are the factors influencing the causes of illness and death? The UK’s Department of Health commissioned a study in 2001 to look at the possible direct impacts of climate change on health in the UK.1 The findings, which were updated in 2008, projected that:

• cold-related deaths are likely to decline substantially (an estimate of 22,000 per year),
• heat-related deaths are likely to increase by a much smaller number (200 per year),
• cases of food poisoning could increase significantly (10,000 per year),
• injury and death from severe weather events will increase,
• cases of skin cancer and cataracts are likely to increase (5,000 and 2,000 per year),
• cases of vector-borne and water-borne disease may increase slightly but the effect is likely to be small.

The impacts of climate change on health include:
• an increase in injury and death from severe weather events,
• an increase in the spread of vector-borne and water-borne disease,
• the net impact of air pollutants on health will probably decline;
• the spread of certain infectious and water-borne diseases may increase slightly but the effect is likely to be small.

These direct impacts are the same in all of the scenarios that we explore in this report. However, the indirect impacts of climate change on the causes of illness and death, and the wider changes as a result of other factors, are much harder to anticipate and may have significant effects that are not as easy to predict.

How do society allocate responsibility for healthcare?
How do society allocate responsibility for healthcare? There is clearly considerable uncertainty about some of these effects, but all in the picture of health and healthcare evolves. As a result, the burden of disease has declined. In contrast, ‘Efficiency First’ is a societal shift towards wellbeing in an environment of scarcity. In ‘Lifestyle Culture’ collaboration within and between communities is key. In ‘Efficiency First’ the state provides a basic safety net but individuals are expected to make their own provisions for healthcare and spending money to deal with the consequences.

The development of nanotechnology and improvement in genetic therapy are big stories, with the potential to improve health. As a result, the burden of disease has declined. In contrast, ‘Efficiency First’ is a societal shift towards wellbeing in an environment of scarcity. In ‘Lifestyle Culture’ collaboration within and between communities is key. In ‘Efficiency First’ the state provides a basic safety net but individuals are expected to make their own provisions for healthcare and spending money to deal with the consequences.

We explored how these factors into different trends and distilled them into a list of 45 questions for use in the first workshop. These questions, such as ‘What role does the private sector play in health service provision?’, ‘What is the role of the pharmaceutical industry?’ or ‘Is the user of the environment more integrated into health care systems?’, were then grouped into four general areas that we used to struct our scenarios.2

Interviews
As part of our initial research we also conducted interviews with leading thinkers on health and health policy. We presented them with the Climate Futures scenarios and asked them for their responses, what they considered avoidable the likely impact on health and healthcare, and how they imagined public services would be delivered in these worlds.

Workshops
We ran two workshops for this project with a variety of experts from across the NHS, the Department of Health, and other bodies.

We used the information we had gathered from the background research and interviews as a starting point for the first workshop. We worked with participants to agree and prioritise the questions, grouping them and then finding different answers for each question under the differing contexts of the four scenarios.

2 The full list of questions is shown in the appendix.
4. Scenarios

Our four scenarios show how health and healthcare in England could be very different in 2030. Adapting the Climate Futures scenarios on which they were based was done in a four-phase process:

Background research
Through desk research we collated a set of over 170 factors that we could foresee impacting on health in the next few decades. These ranged across many different sorts of topics, such as the growing number of people opting for surgery to deal with obesity, the degree to which people manage their own health information, the pressure on NHS resources, and potential changes to the role of pharmaceutical companies.

We worked to group these factors into different trends and distilled them into a list of 45 questions for use in the first workshop. These questions, such as ‘What role does the private sector play in health service provision?’, ‘What is the role of the pharmaceutical industry?’ or ‘Is the use of the natural environment more integrated into healthcare prevention and cure?’ were then grouped into four general areas that we used to structure our scenarios.4

Interviews
As part of our initial research we also conducted interviews with some leading thinkers on health and health policy. We presented them with the Climate Futures scenarios and asked them for their responses, what they considered would be the likely impact on health and healthcare, and how they imagined public services would be delivered in those worlds.

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After the workshop we took the results and used these, alongside the interview findings, to develop draft scenarios. We brought these to the second workshop for testing with participants, asking them to build on the scenarios and think about the implications for the NHS.

Consultation
After the second workshop we took the results and fed them into a second draft of the scenarios. We invited all the workshop participants and interviewees to be part of a final consultation on the finished scenarios, and incorporated the feedback from that process in the scenarios shown here.

Structure of the scenarios
The scenarios all follow the same structure. First, they explore the wider picture — what is the global context, what is the general political, social and economic backdrop? Then, they go on to address the four broad areas that our research and workshops told us were important in determining people’s health and the healthcare system:

• What are the factors influencing the causes of illness and death?
• What do ‘services for the public good’ look like?
• How has technology developed?
• How does society allocate responsibility for healthcare?

We made no assumptions about the form of healthcare provision in England at the start of this process. By 2030, the NHS may be transformed and almost unrecognisable from today’s perspective; it may not even exist. It will certainly need to be different from today in order to respond effectively to the challenges of the future, climate change not least among them.

4 The full list of questions is shown in the appendix.
Service Transformation

A high price of carbon has ushered in a revolution in how people’s needs are satisfied.

Carbon is one of the most important and expensive commodities in the world today, unleashing unprecedented levels of creativity across the global economy. Companies have rewritten their business models to meet underlying needs, often by selling services instead of products. This is a new type of consumerist world, one with a ‘share with your neighbour’ ethos.

Europe led the way with its Energy Independence Initiative, driven first by concerns over energy security. The continent’s successful new models in infrastructure and business have been exported around the world. Today in 2030, household washing machines are too costly, so advanced collective laundry services are more popular; individual car ownership is unaffordable and undesirable, but rent-a-bike and rent-a-car are booming and mass public transit is hugely successful. Rental services – which offer all-in-one maintenance and waste collection – are widespread for electronic goods.

India is a service hub, which has prioritised the roll out of ‘zeta-broadband’ to its villages over and above investment in roads. The dramatic transformation in business has been painful for some, with rising unemployment in the old high-carbon sectors. The USA’s legacy of individualism – from urban sprawl to cleantech innovation – has made it hard to strip carbon out of its economy. Booming mega-cities are only just managing to cope and fuel poverty is a huge problem.

In the UK, the transition to a more service-based economy has been easier than in most other countries, but has not been without its disruption. The unemployment caused by economic restructuring is now in decline as the benefits of low-carbon innovation are reaped. With ‘carbon efficiency’ replacing cost efficiency as the mantra of business and government alike, companies and public services have localised where possible, working closely with newly empowered communities. Although Britain is still a capitalist country, it is a softer form of capitalism, focused less on the generation of capital and more on meeting needs.

What are the factors influencing the causes of illness and death?

Overall, lifestyles have become healthier and the burden of disease has reduced. Mostly for climate change and affordability reasons, vegetarianism has boomed, growing from 7% of the population in 2009 to 20% in 2030. More people walk, cycle and garden. Communities work together, managing forests to incentivise CO2 emissions, for example by producing their own food or generating low-carbon energy. Cleaner transport and industry means cleaner air, and so fewer related respiratory complaints. Less traffic has also meant fewer road accidents. New building and infrastructure developments routinely ‘design out’ health and safety risks.

Conspicuous anti-consumption is popular. Alcohol consumption has declined significantly; levels of concern about alcohol’s deleterious effects have begun to hit home and lead to a cultural shift towards healthier living. Obesity is also down, though this is as much a result of increasing taxes on obesogenic, carbon-intensive foodstuffs and increasing physical activity as it is of the revolution in vegetarianism.

But there are noticeable problem areas. For example, there has been an increase in fuel poverty, due to high costs of energy, leading to increases in respiratory and other related complaints. Inequalities in access to communities and services have led to localised increases in social isolation and depression (especially in traditionally high-carbon rural areas). Other mental health problems have been on the up due to ever-greater reliance on technology, especially Information and Communication Technology (ICT), and a growing sense of fear and foreboding across society about the future impacts of climate change.

There has also been a significant backlash against the healthy lifestyle mantra, with a large libertarian minority campaigning for ‘more telly, fags, burgers and boozes’. A petition

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1. This corresponds to Office for National Statistics ‘high life expectancy’ projection (medium migration, medium fertility, high life expectancy).
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was recently sent to Number 10 demanding that taxes on fatty foods be removed. The ‘give us back our chips’ petition included over 2 million signatures. At the other end of the political spectrum, some communities – self-styled ‘Uber-healthers’ – refuse to participate in the formal health system, which they see as imposed and inflexible, believing that individuals need more control over their own health.

Carbon efficiency has become the over-riding goal for society, replacing cost efficiency. This has led to some perverse outcomes – for example, in 2026 there was huge media controversy when it was discovered that some doctors were avoiding prescribing carbon-intensive treatments, apparently placing climate change above patient care. Headlines on the Net since have frequently highlighted scandalous instances of so-called ACDs — ‘avoidable carbon deaths’.

Over the past few decades a more open and accepting approach to death and dying has emerged in Europe, the UK included. Palliative care emphasises the importance of ‘family-orientated positive deaths’. Euthanasia became a legal activity for licensed practitioners in 2021. The last three months of life are seen as a precious time of reflection, love and care.

**What do ‘services for the public good’ look like?**

With a very high carbon price set by government, all systems, including public service delivery, are designed to be as carbon efficient as possible. This has meant a huge amount of re-organisation and not a little disruption. Systems tend to be very efficient, highly structured and well-organised, but lacking in flexibility. As a result, it is often difficult to accommodate special cases. For example, remote rural areas, which have the highest per-capita CO2 emissions, are under served. This is where real social and economic exclusion exists. Moreover, the health system has less capacity to deal with neglected or rare diseases, or conditions requiring complex or innovative treatment.

Public service delivery is tiered geographically to reduce the amount of travel and freight required, and to minimise the use of energy in large old buildings where retrofitting new technology is difficult. Services take place at a more local level, but are still directed from the centre to ensure that they are delivered as efficiently as possible.

The service delivery point of choice is the home. One result of this is a decline in the number of one-person households. The house-share or flat-share is now a phenomenon throughout life, not just for students and young people, but for the over-eighties in particular.

This is an ‘upstream’ rather than ‘downstream’ world: policies are implemented to address the root causes of problems, rather than the manifestation of problems. Alcohol policy is a good example. Precious resources are devoted to educating people about alcohol harm, reducing the alcohol content of drinks, and incentivising alternatives to alcohol consumption (for example replacing pubs with recreation centres). Less emphasis is placed on addressing alcohol-related crime or injury directly.

**How has technology developed?**

Technology development continues apace and the high price of carbon means that all new technology must be highly carbon-efficient in order to have a chance of commercial success.

In fact, the carbon price has stimulated a huge amount of technological innovation. Devices are increasingly flexible — suiting various needs and so minimising duplication of gadgets — and durable, thereby increasing the overall material and energy efficiency of the economy.

Virtual communications have boomed. Despite efficiency improvements, the internet still uses huge amounts of energy, but clever siting of server farms and routing stations means that it is now run primarily on renewable sources. If a transaction can possibly be made virtually, using ICT, it is.

The ubiquity of virtual networks extends to healthcare. Local health practitioners can track disease detection in real time; the spread of infectious disease can be tracked globally meaning that the policy response can be almost instantaneous; and remote diagnosis and care is the norm.

**How does society allocate responsibility for healthcare?**

Healthcare is seen as the responsibility of the whole of society. The approach is collaborative. Communities work together to support individual healthy lifestyles and the public sector and business also take responsibility. Market-based solutions are implemented wherever possible, working with communities. This gives business a major role, though government is important in framing how the market works. For example,
businesses routinely make provision for their employees’ health at home as well as in the workplace, and employee contracts ensure that working environments promote healthy lifestyles.

There has been a huge transformation in the pharmaceutical industry. It is more common for companies to seek to make money by maintaining people’s wellness rather than selling drugs for when people are unwell. One business runs a ‘rent-your-organs’ scheme, in which, in return for lifetime care and advice, customers agree to give up certain organs for transplant at the end of their life.

‘Carbon Cartels’ have been permitted by the government where there is a clear overall benefit to greenhouse gas reductions. For example, pharmaceutical companies have agreed different areas for competition and collaboration.

What does ‘Service Transformation’ mean for the healthcare system in 2030?

New constraints and new opportunities?
The all-pervading emphasis on low-carbon activity in this scenario would mean radical changes for the health system: avoiding travel where possible, developing much more localised systems, and a heavy reliance on ICT (using renewable energy sources).

Devolved funding?
The health service in ‘Service Transformation’ would probably remain funded chiefly from national government coffers, swelled perhaps by taxes on products and behaviour that are both unhealthy and carbon-intensive. Central funding might be supplemented with local taxes at a local level. Individuals could be charged for use, with tax incentives to help reach the excluded and to encourage healthy and low-carbon behaviour. The overall cost of the health service may be lower, due to efficiencies and the type of care necessary.

A lighter burden?
The health system would in some ways have less to do. This is a scenario in which measures to change people’s behaviour have worked: most people’s diets are much healthier; people lead more active lives; and the environment in general is more healthy and encourages healthy lifestyles.

What’s more, a changing attitude to end-of-life could mean less need for investment in expensive and energy-intensive end-of-life treatments. Much wider sharing of responsibility for health across society could lighten the burden on the health service itself.

Challenges in reaching everyone?
The healthy society in ‘Service Transformation’ would not just be the responsibility of the health service, but more likely a range of different services all working together: communities, local authorities, schools, and so on. The local focus may also mean a more integrated approach, with one local organisation providing prevention work, primary, secondary and tertiary care. This would no doubt increase the exposure of health services to most people.

But it could be harder to target the needy: those for whom energy costs are too high, who are unable to use ICT or who live in remote and inaccessible places. It may also be more difficult to accommodate the needs of people who reject the healthy lifestyle mantra: a health service more geared to prevention than cure could have difficulty treating large numbers of people who persist with unhealthy diets and lifestyles.
I've only got two options, walking or cycling to work, and I don't enjoy either. The weather never seems on my side! I've tried to move closer to the office but it's too expensive. I suppose it's good for me as it's the only exercise I get, but I do wish there was better public transport where I live.

I have to admit that I'm not the healthiest person alive. I've got a sweet tooth and I'm always too busy to cook so I rely on convenience food. I'd like to be fit, but to be honest I'd rather sit down and watch the telly with a cigarette, a burger and a beer to wash it down. That beats going for a run anytime.

I e-shop twice a week and I go to Metro once a month for a ‘big stock up’ and a bit of retail therapy. I love the shops and services they've got there. Luckily I've got a rich neighbour who has a car he doesn't mind sharing.

I get quite a few offers from my Metro membership and I thought I should take them up on the wellness programmes and free health checks. Apparently they could tell I wasn’t very healthy because of the food I was buying. I went in for a check and found out I had Type II diabetes.

I had a blood glucose sensor surgically implanted under my skin — they do it via a syringe so it’s not so bad — and the NHS picked up the bill.

The wellness programme convinced me to go in for regular sessions and I also agreed to use a ‘lifestyle monitor’ to keep track of my activity levels. It syncs up to my glucose sensor and helps me manage the diabetes. One thing I really appreciate is that Metro now prepares personalised shopping lists for me, which is great as I’m really not very good at picking out healthy food. So long as I keep my community points up I’ll get the service for free.

One of the wellness sessions warned me that diabetes can make you lose your sight, so I go for annual eye screening to check for signs of diabetic retinopathy. It’s all available at Metro, so really convenient.

Chris Johnson: 42 years old, male
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Service Transformation

Chris Johnson: 42 years old, male
An increasingly individualistic, consumerist and fast moving world. Rapid innovation in energy efficiency and novel technologies have enabled a low-carbon economy with almost no need for changes in lifestyle or business practice.

The result is an increasingly individualistic, consumerist and fast moving world. High levels of economic growth in the global economy for decades have only been interrupted by relatively minor downturns related to the availability of resources. Growth in the southern hemisphere has been particularly marked. But overall levels of growth mask a growing divide between rich and poor people. The world has seemed close to overheating for years, but somehow keeps going by developing novel efficiencies and more sophisticated ways of doing things – always adding to the complexity of systems. Some call this a golden age of technology and freedom, others call it a very shaky house of cards.

The UK has taken full advantage of the growth in the global economy. The brief recession in 2008-2010 prompted the UK to invest more in knowledge and technological industries and this has helped secure its economic future. Whilst not on the scale of China and some southern countries, it is pleased with the route it has taken. However not everyone feels the same and the riots in a deprived area of Birmingham in 2011, where 10 died, served as a stark reminder that not all UK citizens are enjoying the fruits of economic growth. The population is 71.7 million (up 18% from 2007) and over 65s account for 23% (up from 16% in 2007).

What are the factors influencing the causes of illness and death?

The fast moving individualistic world means that many feel an increasing sense of alienation and mental health problems have been steadily rising. Special private mental health centres where people can come for several days of respite care are commonplace. The gap between the rich and poor has been steadily increasing. In almost every country, including the UK, there exists an underclass that feels alienated and oppressed. These people are plagued by the age-old problems of obesity, depression and malnutrition. They are also those most likely to be affected by the climate change impacts of hotter summers and extreme weather events, more prevalent nowadays. However, with a growing private health sector, their access to healthcare is diminished and more rely on virtual self-diagnosis and prescriptions. This has created another layer of health problems from misdiagnosis, leading to even more serious heart and liver problems.

The push for more and more cures has meant that people are living longer. The diseases of extreme old age are more common and intensive palliative care lasts longer. Older people are often bending over themselves in their desire to have the latest life-extending drug or treatment.

Rising temperatures due to climate change and the urban heat-island effect, combined with a decline in exposure to the natural world, have led to a rise in the prevalence of respiratory conditions such as asthma.

Photo credit: Charles Taylor, vhpfoto
This corresponds to ONS ‘high life expectancy’ projection (medium migration, medium fertility, high life expectancy).

The power of innovation has revolutionised the economy. A high-tech, low-carbon transformation is delivering dramatic cuts in greenhouse gas emissions while managing to sustain economic growth. Across the world, innovative business solutions appear to sustain the insatiable demands of eight billion people to consume more, grow richer and live longer. The result is an increasingly individualistic, consumerist and fast-moving world. High levels of economic growth in the global economy for decades have only been interrupted by relatively minor downturns related to the availability of resources. Growth in the southern hemisphere has been particularly marked. But overall levels of growth mask a growing divide between rich and poor people. The world has seemed close to overheating for years, but somehow keeps going by developing novel efficiencies and more sophisticated ways of doing things –– always adding to the complexity of systems. Some call this a golden age of technology and freedom, others call it a very shaky house of cards.

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The private sector plays a greater role in healthcare in the UK and globally and this is blamed in many instances for the pressure to release drugs faster. Many epidemics have been attributed to the fast release of poorly-tested new drugs. It was thought that greater control would be put in place after the proteome personalised drug disaster of 2021 where 200 died, but it seems to have been quickly forgotten.

The push for more and more cures has meant that people are living longer. The diseases of extreme old age are more common and intensive palliative care lasts longer. Older people are often bandying themselves in their desire to have the latest life-extending drug or treatment. Rising temperatures due to climate change and the urban heat-island effect, combined with a decline in exposure to the natural world, has led to a rise in the prevalence of respiratory conditions such as asthma.

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Fit for the future v5.indd   20-21

numbers of migrants, including the health service, have extreme difficulty in maintaining

Global economic growth, particularly in low- and middle-income countries, has meant that

happy to pay, it can be accommodated.

annual basis. The wants and needs of the patient are often intertwined. As long as you're

alongside lifestyle details and medical history, is used to set out what is needed on an

also decide to reject prescribed treatments, based on the information they have gathered.

preventative operations to avoid health problems later.

a surgical procedure or take appetite suppressing pills. People are also happy to have

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This is a

are used to accessing services online.

Despite expanded local services many first appointments are with a virtual doctor as people

While the strides made in genetic testing, it is more common for fertile couples to opt

for IVF treatment, in order to choose the 'best' baby. For those who don't, genome

for nano-implants to enable a gradual release of drugs, which helps to

successful, and enable the creation and acceptance of artificial organs. Many older people,

diseases such as cystic fibrosis, allow hip replacements and pacemakers to be more

nanotechnology

has revolutionised medicine as predicted.

Bionics

has been one of the main areas of growth in medicine, with the first bionic eyes

in Los Angeles in 2020. Bionic limbs have a far lower infection rate than the

old strap-on limbs and many rate their bionic eyes as better than the natural eyes they

Robots

Robots are able to perform more precise operations and their success rates mean people

in particular, opt for nano-implants to enable a gradual release of drugs, which helps to

diseases such as diabetes, control blood pressure, and even interfuse with the most serious


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Many of the people living in this scenario –– at least those with the money –– would rather

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too complex to control?

Easy access to information and individual empowerment in this scenario could lead to

How does society allocate responsibility for healthcare?

Although people talk more about responsibility for their health, many people are happy to monitor their health regularly with their home monitoring kit (or diagnostic

The role of state healthcare has also changed somewhat. With regular new drugs and treatments being developed and made available, the state has found that its role in the regulation of health information and consumer protection has increased drastically. This has also contributed to the pressure on its budget.

What do ‘services for the public good’ look like?

The price of healthcare systems in the UK has fluctuated. Those who can pay, do so, to

across the latest drugs.

Despite an expectation of greater centralisation, the push has been for more specialised

services to be offered locally. Many older hospitals have become like mini-hospitals, offering an array of services and treatments. Services previously provided in hospitals, such as x-rays and ultrasonics, are now offered in their local clinics. With technology constantly developing, much of the newer, more advanced equipment is still only offered currently with people travelling in their electric or hydrogen cars to see these services.

Despite expanded local services many first appointments are with a virtual doctor as people

people are used to accessing services online.

This is a quick-fix world, whether for treatment and care or prevention. Confidence in technology is high, and people take less responsibility for leading a healthy lifestyle, assuming that the consequences can always be dealt with by taking a pill or undergoing a surgery or treatment. This makes people happy to have their health in their own hands.

That is if they have the money.

People are more-demanding, asking for specific treatments that they have read about, and are effective in reducing symptoms of disease. People are also happy to have

We can also see that non-professionals are also now having to provide medical advice and care to patients.

For those who can afford it, the healthcare system is focused on you as an individual

Most people in the middle class have their generic sequence carried out and this,

along with lifestyle details and medical history, is used to set out what is needed on an

the health service, have extreme difficulty in maintaining the UK is a less attractive destination for migrant labour. Public services reliant on large

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That is if they have the money.

People are more-demanding, asking for specific treatments that they have read about, and are effective in reducing symptoms of disease. People are also happy to have

We can also see that non-professionals are also now having to provide medical advice and care to patients.

For those who can afford it, the healthcare system is focused on you as an individual

Most people in the middle class have their generic sequence carried out and this,

along with lifestyle details and medical history, is used to set out what is needed on an

the health service, have extreme difficulty in maintaining the UK is a less attractive destination for migrant labour. Public services reliant on large
How does technology develop?

The emphasis on new and innovative solutions to health challenges has also benefited the healthcare system. New technological and drugs are constantly being explored and developed, and in recent years the use of robots in surgery has increased. The success rates of such procedures mean that people are more likely to choose robotic surgery over traditional methods.

The development of nanotechnology has revolutionised medicine as predicted. Nanotechnology applications are now regularly used to kill cancerous cells, cure progressive diseases such as cystic fibrosis, and improve the success rates of operations. The success of these technologies has led to an increase in the number of people seeking medical treatment.

The state has a different role to play in healthcare. Alongside QOF the general practitioner (GP) is increasingly seen as the gatekeeper to healthcare services. The role of the state is now to ensure that healthcare is accessible to all, rather than being a preserve of the rich. Many of the middle classes feel disgruntled that they cannot access the latest treatments. People are also more likely to have private health insurance.

A two-tier system?

In this scenario, the burden of care for the health system has undoubtedly risen, and more money as a proportion of national income is being spent on healthcare, in particular because of the proliferation of new health technologies. The public purse would still have a major role to play in providing the basic health safety net, but the balance of funds would have shifted towards personal provision. In this scenario, the role of the state is to regulate health information and consumer protection has increased drastically. The state has also contributed to the pressure on the budget.

How does society allocate responsibility for healthcare?

The public healthcare system is the system that the UK has developed. Those who can pay for it, do so, to access the latest drugs. Despite an expectation of universalisation, the public healthcare system does not provide all services. The private healthcare system is focused on you as an individual.

For those who can afford it, the healthcare system is focused on you as an individual. People are also more likely to have private health insurance.

People are more demanding, asking for specific treatments that they think are effective and refusing to accept medical advice to the contrary. Conversely, patients can be too ready to accept medical advice, assuming that the consequences can always be dealt with by taking a pill or undergoing a surgical procedure or take appetite suppressing pills. People are also happy to have preventative operations to avoid health problems later.

People have shifted towards personal private insurance. A much larger and more varied private sector would not just offer a single product to richer people but also develop very specific treatments for those who want them. The role of state in healthcare has also changed somewhat. With regular new drugs and new technologies, the state has a different role to play in healthcare.
For years I’ve seen a lot of debate in the media about health, especially over how much it costs. Things have changed quite a bit since I was young. I decided to take out private health cover a few years ago to ensure I could get treatment no matter what came along.

Two years ago I was diagnosed with diabetes. It was discovered during a routine visit to my local wellness medical centre. Thank goodness I had my medical cover to pick up the bill, as diabetes is notoriously expensive to manage without cover. Some people have been really hard done by.

When I was first diagnosed I wasn’t able to control my blood glucose levels at all. Changing my diet and exercising didn’t seem to have any effect and I really didn’t want to be taking tablets, having patches, or injections for the rest of my life. Mind you I don’t want any further health complications in later life as a result of the diabetes.

I opted for the quick fix — islet transplantation. It was available under my health cover and the op could even be done at my local wellness medical centre. Now my diabetes is stable and under control.

I feel really bad about those who can’t get this kind of treatment. I wish it were available more widely. I support my local ‘Diabetes Support’ group with time and donations but I’m not sure how much that helps.

My friend, Ashley, has never been able to afford private medical cover. He only discovered he had diabetes during treatment for various skin infections, when he had pre-operative blood tests. Because it was diagnosed late, his diabetes led to him losing his sight.
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This corresponds to ONS ‘high fertility’ projection (medium life expectancy, medium migration, high fertility).

This is a ‘wellbeing economy’ that highly values meaningful work, low-impact lifestyles, more time with family and friends, better health outcomes, creative educational experiences and a stronger sense of community. Countries prioritise economic and social resilience over the idea of economic growth.

During the global depression of 2009–18, new forms of living were born out of necessity. Individuals were forced to scale down consumption and prioritise meeting their immediate needs. Communities favoured local knowledge and looked to their own members to provide goods and services. As the world emerged from the depression, these new ways of living survived: from lower-impact lifestyles to advanced networks that informally provide for needs at a local level.

This is not a post-capitalist society –– people work, consume and profit in markets. But citizens view money as a means to different ends and active governments tightly regulate the economy. Nor do communities experience isolation cut off from the outside world. Mindsets are intensely connected worldwide through global communications –– different cultures learn from one another, and diverse faith communities find common cause in advocating simplified consumption patterns and more sustainable lives.

But happiness is not universal. ‘Free-riders’ –– quick to abuse the goodwill of others –– profit from collective agreements, plunder resources and exploit the vulnerable. In the communities hit hardest by the depression, many poor and excluded people remain isolated, shunning offers of support in a daily struggle to survive.

New priorities of ‘wellbeing’ and quality of life are bubbling up across the world as more sustainable forms of living become established. In the UK, the government has moved its policy focus in line with the shift in societal values. National indices of wellbeing –– through the measurement of outcome variables such as healthy life expectancy, educational participation, social wellbeing, trust in the community –– are alongside GDP as a measure of the strength of the economy. The UK population is 72.8 million (up 20% from 2001), a factor of high fertility rates and continuing migration. One in five people (22%) of the population.

What are the factors influencing the causes of illness and death?

Quality of life is the key driver of economic and social activity, which has led to changes in people’s lifeways, eating and working patterns. In turn this has led to a slow-down in the rate of lifestyle-related illnesses. However, this is still a legacy effect from the beginning of the century so the children of Generation Y (those born in the early 1960s to late 1970s), now in middle-age, are still afflicted by Type II diabetes more than any generation before or since.

Citizens have adopted slower lifestyles leading to a large increase in walking and cycling and reduced reliance on cars. This has improved fitness and reduced pollution and, as a result, asthma and other respiratory conditions have reduced. Slower lifestyles and increased leisure time have also led to a baby boom, which is putting further pressure on per capita carbon reduction targets.

The government’s measurement of wellbeing indices has led it to focus on health messaging around contentment and prevention. Primary prevention measures fall on receptive ears and have had a hugely positive impact on the population’s health –– health literacy is at an all-time high.

This focus on wellbeing and corresponding reduction of lifestyle-related illnesses means that communities take a dim view of what they see as health transgressions. People who smoke, drink excessively, and take little exercise, are increasingly frowned on by society. Some choose this approach deliberately as a counter-cultural lifestyle, though extremely high taxation on tobacco, alcohol and unhealthy foodstuffs make it a very expensive choice.

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across the workforce, and with state pensions worth very little in monetary terms, retirement either happens very late in life (in the early 80s) or for some people not at all. Some members of Generation X (those born in the early 1980s to early 1990s) have expressed a wish for their bodies to be left to a subject to be scavenged by wild birds and animals when they die, as the city dumps them in their Asian backyards in the late 20th century. Authorities have now given permission for these in a cemetery type area in Scotland, Wales and the Peninssula. Woodland and other ‘green’ burial options are also increasingly popular.

People are increasingly interested in the integrity of their bodies. This has meant that organ and tissue donations are at a wormanly low rate, although demand is slightly reduced due to an increase in the number of living cells in which people request that their organs be used, and there is an increased awareness that some people who are still registered organ donors, there has been a trend for people to specify who they would be happy for their organs to go to; for example refusing donations to people who they see as health transgressors.

The type of environmental catastrophe could happen at any time and in any place. Some people find there are still great fears about climate change, and a perpetual worry that the next big disaster could happen at any time. This has led to an increase in injuries and trauma, particularly from those switching away from office work for the first time in their lives. This has led to a substantial reduction in the number of tertiary hospitals specialised, including some forms of chemotherapy, are now possible in the home. These interventions near-patient care, with care often provided by charity and community groups.

In seeking health, people look first to their families and communities — in their neighborhoods, at work and online. Health service provision is moving towards early intervention near-patient care, with care often provided by charity and community groups.

The expectation of businesses to meet a diverse social purpose and to keep their employees fulfilled and happy means that workplace health strategies are common. Health and safety officers are increasingly focused on the health aspect of their job description, and are more likely to be giving out nutritional advice than safety warnings.

The state has an important role in maintaining equality of access to healthcare between communities and avoiding hypothecation of local taxes where there are particular interest.

What does ‘Redefining Progress’ mean for the healthcare system in 2030?

A healthier society, but still lots to do

Despite the renewed emphasis on leading healthy, natural lives — something that would inevitably over time reduce the healthcare burden — there is still plenty to do for the health of the nation's health overall declines. Much healthcare is delivered at the community level through friends, families and the voluntary sector. The centralized role of health is seen as integral to people's health. People's interest in maintaining their own health has meant that their first port of call tends to be their communities both local and virtual. Health groups have replaced book groups as a common form of leisure activity; individuals seek to retreat to a regulating and co-ordinating role. The substantial increase in the number of active people among the retired population, especially those with professional skills and resistance to invasive or high-tech procedures. The boom means more ante- and post-natal care. To complicate matters, there is growing resistance to invasive or high-tech procedures.

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Health services in this scenario are likely to be funded centrally by the state, but with the possibility of local top-ups, perhaps through issuing bonds. Formal systems would provide specialist services and facilitate access. The state also regulates the activities of businesses offering prevention and primary services in local markets. Some specialized care is very available, but not always at standard rate in Europe. A pan-European health study showed that huge carbon efficiencies could be made through consolidation in super-specialist hospitals. Other forms of care that were previously considered highly specialized, including some forms of chemotherapy, are now possible in the home. These interventions near-patient care, with care often provided by charity and community groups.

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A cheaper way of delivering healthcare

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The state has an important role in maintaining equality of access to healthcare between communities and avoiding hypothecation of local taxes where there are particular interest groups in one area.
across the workforce, and with state pensions worrying very little in monetary terms, retirement either happens very late (in the early 80s) or for some people not at all. Some members of Generation X (those born in the early 1980s to early 1990s) have expressed a wish for their bodies to be left on a hilltop to be scavenged by wild birds and animals when they die, like the sky burials they saw in their Asian backpacking trips in the late 20th century. Authorities have now given permission for these in a-cementery cave in Scotland, Wales and the Pennines. Woodland and other ‘green’ burial options are also increasingly popular.

People are increasingly interested in the integrity of their bodies. This has meant that organ and tissue donation are at a record-low rate, although demand is slightly reduced due to an increase in the number of living cells in which people request that their families consent to it. Some people who are still in their prime, have had a heart to people to specify who they see as health transgressors.

Some people have struggled with adapting to the new direction that development from office work for the first time in their lives. This has led to an increase in injuries and trauma, particularly from those switching away to manual labour-related injuries are up, the elderly are more likely to be giving out nutritional advice than safety warnings. Officers are increasingly focused on the ‘health’ aspect of their job description, and are fulfilled and happy means that workplace health schemes are common. Health and safety officers are increasingly focused on the ‘health’ aspect of their job description, and are more likely to be giving out nutritional advice than safety warnings.

How has technology developed?

The Internet is now integral to people’s health. People’s interest in maintaining their own health has meant that their first port of call tends to be their families or communities – in their neighborhoods, at work and online. Health service provision has moved towards early intervention neareastcare, with care often provided by charity and community groups. The expectation of businesses to meet a diverse social purpose and to keep their employees happy and healthy means that workplace health initiatives are common. Health and safety officers are increasingly focused on the ‘health’ aspect of their job description, and are more likely to be giving out nutritional advice than safety warnings.

What does ‘Redefining Progress’ mean for the healthcare system in 2030?

A healthier society, but still lots to do

Despite the renewed emphasis on leading healthy, natural lives – something that could hardly over time reduce the health burden – there is still plenty to do for the health system in this scenario. Manual labour-related injuries are up, the elderly are suffering from a range of health issues associated with the ‘old old age’, and a new baby boom means more mid-age and post-retirement care. To complicate matters, there is growing resistance to innovate or to adopt new procedures.

A lack of coordination?

Healthcare is delivered at the community level through friends, family and the voluntary sector. The centralised role as facilitator and coordinator, trying to maintain equality of outcomes across what would no doubt be a very diverse picture from location to location. The link of direct contact between the service provider and the patient is a perception of the centre as remote and bureaucratic. There is a real threat that into the state of the nation’s health overall declines.

A cheaper way of delivering healthcare?

Health services in this scenario are likely to be funded centrally by the state, but with the possibility of local top-ups, perhaps through issuing bonds. Formal systems would provide a framework, with more informal systems active in prevention and primary care. Healthcare could be cheaper to deliver in a model, in a sense ‘sowing the current model of funding the NHS’.
The company I work for runs one of those workplace health schemes that the government’s been promoting over the years. We have an hour-long compulsory lunch break, for example. I usually use the time to go running round the building’s grass roof track with a few of my colleagues.

Another perk of my workplace health scheme is the annual health check. It happens on-site making it pretty convenient. Apparently it’s more carbon- and cost-effective for StarTECH too. A couple of years ago one of my urine tests showed a high level of glucose — further tests confirmed that I had diabetes.

I already led a relatively healthy lifestyle but since being diagnosed I’ve worked even harder to stay fit and healthy. I now cycle to work, and this year StarTECH started to give the cyclists free breakfast — a great social time at the start of the day. I’ve lost a fair bit of weight already!

When I was initially diagnosed I chose one of those real-time continuous glucose-monitoring and delivery devices. It seemed much simpler to manage than the jet injectors, inhalers, patches, insulin tablets and whatever else. It maps my response to various glucose loads, monitors my exercise, and transmits data to my insulin pump, so that I get the right amount of insulin matched to my precise glucose levels.

It’s all quite organised at work. All prescriptions for staff under the workplace health scheme are delivered direct to us in one go.

The scheme is also great for getting support and resources on things like how to lose weight, quit smoking and take up new forms of exercise. We get a lot of encouragement to use the company gym and roof-top and there are plenty of facilities and time set aside for staff to get the most out of various sports and leisure activities.

There are quite a few different ways that diabetes can be managed nowadays, and I think I’m quite lucky. My mate Ashley was diagnosed through one of the free five-year NHS MOT checks. He has to take an insulin tablet every morning which is free on the NHS but isn’t specific to his real-time needs. He does monitor his blood-glucose levels but as it’s not connected up to an insulin pump it’s not very helpful.

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Chris Johnson: 42 years old, male

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This is a world that woke up late to climate change. Efforts to broker a post-Kyoto agreement faltered, and instead, different regions of the world pursued their own priorities. But as the environmental impacts began to awaken, the world started to come together. In 2017 a global pact was signed, but even so, the global political community was forced into reactive strategies. Governments began to rely on hard policy to change how businesses worked and how people lived their lives. As time went on, the state adopted a stronger and stronger approach, rationalising whole industry sectors to reduce their climate change impacts, and even putting ‘Carbon Monitors’ in people’s homes to watch their energy use.

Governments now push markets to the very limit of what they can deliver. In different ways in different countries, economies have been forcibly re-orientated to focus on dealing with climate change, in much the same way as sometimes happens in times of war. But in most cases this has developed gradually, ratcheting up over time. Citizens have surrendered control of their lives piecemeal rather than all at once, as trading regimes, international law, lifestyles and business have responded to the growing environmental crisis. And so in 2030, greenhouse gas emissions are beginning to decline, but the cost to individual liberty has been great.

In the UK the government has had to implement a tough carbon-rationing approach and the size of the state has grown in response. The response of the population is mixed: anger at the removal of democratic liberties is tempered by a general understanding of the necessity of the action. While anger does spill over into periodic civil unrest, many communities have found strength in joining together and finding low-carbon ways to improve the quality of their lives. The UK population is 68 million.8

What are the factors influencing the causes of illness and death?

The increased size of the state means that levels of employment are very high, though high levels of taxation and severe resource constraints mean that levels of income are much lower across local areas. However, as resource constraints have affected everywhere, income inequalities across society have been reduced, removing a lot of status-related anxiety issues.

One key impact has been on the diet of the population: importing food is too expensive due to the high levels of carbon taxation on freight, so the national diet is UK-grown, seasonal and reliant on low-carbon techniques. Food distribution is managed by the state, with a weekly ration delivered to households containing the elements for a diet described by the UK Secretary of State for Health & Wellbeing as ‘dull but nutritious’. Lord Oliver of Crossharbour, the government food tsar, writes weekly recipes included with the delivery suggesting how to use the ingredients.

The healthier diet means that the rise in the number of new diabetes cases has slowed, and obesity is on the retreat, but there is annual scaremongering in the media during the February to May ‘hunger-gap’ when there is less produce available and the size of the delivery is reduced. To counterbalance worries of malnutrition with associated conditions such as tooth decay and scurvy, the government has implemented an annual therapeutic food distribution programme, targeted at pregnant and breast-feeding women and children under two, ensuring that those groups have access to adequate micronutrients and vitamins.

The carbon-intensity of meat production means that this has been almost completely phased out in the UK, with a managed transition down to vegetarian production in the years 2023-2026; years that are remembered fondly due to the glut of cheap meat on the market as farmers reduced their livestock herds.

The shift of production back to low-carbon agricultural and manufacturing techniques mean more people are engaged in manual labour, which has kept those individuals much fitter for the future. A key part of the population has adapted to a slower pace of life and a reduced expectations of short-term pleasure, which has helped to lower fertility rates, matched with an overall 10% fall in population from current levels.

8 This compared to 2010 when the population was 64 million, which had experienced low fertility, matched with an overall 7% fall in population from current levels.
This is a world that woke up late to climate change. Efforts to broker a post-Kyoto agreement faltered, and instead, different regions of the world pursued their own priorities. But as the environmental impacts began to worsen, the world started to come together. In 2017 a global pact was signed, but even so, the global political community was forced into reactive strategies. Governments began to rely on hard policy to change how businesses worked and how people lived their lives. As time went on, the state adopted a stronger and stronger approach, rationalising whole industry sectors to reduce their climate change impacts, and even putting ‘Carbon Monitors’ in people’s homes to watch their energy use.

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In the UK the government has had to implement a tough carbon-rationing approach and the size of the state has grown in response. The response of the population is mixed: anger at the removal of democratic liberties is tempered by a general understanding of the necessity of the action. While anger does spill over into periodic social unrest, many communities have found strength in joining together and finding low-carbon ways to improve the qualities of their lives. The UK population is 68 million.\(^1\)

The increased size of the state means that levels of employment are very high, though high levels of taxation and severe resource constraints mean that levels of income are much lower across all social strata. However, as resource constraints have affected everyone, income inequalities across society have been reduced, removing a lot of status-related anxiety issues.

One key impact has been on the diet of the population: importing food is too expensive due to the high levels of carbon taxation on freight, so the national diet is UK-grown, seasonal and reliant on low-carbon techniques. Food distribution is managed by the state, with a weekly ration delivery to households containing the elements for a diet described by the UK Secretary of State for Health & Wellbeing as ‘dull but nutritious’. Lord Oliver of Chwordpress, the government food tsar, writes weekly recipes included with the delivery suggesting how to use the ingredients.

The healthier diet means that the rise in the number of new diabetes cases has slowed, and obesity is on the retreat, but there is annual scaremongering in the media during the February to May ‘hunger-gap’ when there is less produce available and the size of the delivery is reduced. To counterbalance worries of malnutrition with associated conditions such as rickets and scurvy, the government has instigated an annual therapeutic food distribution programme, targeted at pregnant and breastfeeding women and children under two, ensuring that these groups have access to adequate micronutrients and vitamins.

The carbon-intensity of meat production means that this has been almost completely phased out in the UK, with a managed transition down to vegetarian production in the years 2023-2026; years that are remembered fondly due to the glut of cheap meat on the market as farmers reduced their livestock herds.

The shift of production back to low-carbon agricultural and manufacturing techniques mean more people are engaged in manual labour, which has kept those individuals much happier and more productive than they might have otherwise been.

What are the factors influencing the causes of illness and death?

The UK population is 68 million.\(^1\)

\(^1\) This compared to 600 in 2009, which has increased due to reduced loss of life expectancy due to fertility, matched with an increase in life expectancy among the population from lower income groups.
Primary and secondary prevention services are seen as efficient from both a monetary and carbon perspective and are therefore the top priorities in government policy. For example the carbon intensity of being ill versus being vaccinated means that the government has made it no longer possible for people to opt out of vaccination. Mass vaccination programmes mean street to street on an annual basis, ensuring that both children and adults have up-to-date immunity against a wide variety of illnesses, including flu and malaria.

How has technology developed?

As technology R&D is directed at climate change there have been almost no breakthroughs in health technology since 2020. The rationing of carbon intense services and a switch to low-carbon provision where possible has meant that high-quality palliative care (of which much is provided by community groups) has replaced high-cost interventions at the end of life, and organ transplants and life support machines are rare.

How does society allocate responsibility for healthcare?

Just as in war-time, there has been a cultural shift towards a greater feeling of community. It is understood that the government priority is climate change, and people feel united in their need to do their bit to combat the crisis. How do we ensure that this stays front and centre in people’s minds, leading to a great deal of community interest in the cause?

The public is bombarded with messages about the urgency and scale of the climate change problem, ensuring that this stays front and centre in people’s minds, leading to a great deal of energy throughout society. One result has been an increase in alcoholism. Banning of still and extremely alcoholic microdistilleries is common as a way to avoid carbon emissions. However, the level of taxation on tobacco, coupled with lower incomes, means that smoking is restricted to the few remaining super-rich.

What does ‘services for the public good’ look like?

The shift to an economic model of state rationalism has seen a huge growth in the size of the state and the number of government employees. Many of these are employed in sectors new to the government, for example in low-intensity food production. Public services are seen as an absolute necessity with ‘no-frills public services’ the government mantra. Most transactions between the public and the state are carried out over the internet, allowing consolidation of local authorities into super-unitary authorities. People’s level of job satisfaction has improved as they see the reduction in road traffic accidents. This switch has had health benefits through a huge increase in walking and cycling, and a resurgence of nationalism, which has led to many long-term immigrants returning to their places of birth because they want to do their bit there, rather than in the UK. This has had a huge impact on staffing with a shortage of nurses, laboratory technicians and other skilled staff. The unemployed and school leavers are being encouraged to fill this gap.

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What does ‘Environmental War Economy’ mean for the healthcare system in 2030?

A no-frills health service?

The nanoeconomy that has come into this country is now insulating greenhouse gas emissions as much as possible, as easily as possible, and by practically any means possible. This would necessarily lead to a lower priority being placed on healthcare. There would be less money for expensive interventions and carbon-intensive treatments. Staff would be encouraged to ‘make-do and mend’, reusing equipment more, where appropriate, and repairing rather than replacing anything that is a controllable and low-green-house world, the health system would also inevitably be funded by central government taxation, with little opportunity to channel funds or use through the private sector.

Grey market healthcare?

Due to a lack of funds, many conditions that are treated in 2018 would go untreated in this world. Resources would be directed towards treatments likely to save children, and people with minor complaints would often have no choice but to put up with them. Many people would have to live with disfigurement, or pain. It is likely, however, that a grey market in healthcare would emerge: at one end of the scale, community-based care groups set up to fill the gap left by the retreat of the health service, on the other, high-tech drugs and poorly executed, unregulated care.
filter, but has also led to a shift in public perceptions of these jobs, with people reporting much higher levels of job satisfaction than in previous years, again contributing to their wellbeing.

The public is bombarded with messages about the urgency and scale of the climate change problem, ensuring that this story front and centre in people’s minds, leading to a great deal of stress throughout society. One result has been an increase in alcoholic abuse. Banning off-licences and extending alcoholic microdistilleries is common as a way to avoid addiction. However, the level of taxation on tobacco, coupled with lower incomes, means that smoking is restricted to the few remaining super rich.

As in many other parts of the world, the UK has received a large number of climate refugees from Bangladesh, the Pacific islands and parts of coastal Africa, bringing with them diseases new to the UK. The extremely high price of oil has reduced private car use, and car ownership is back down to levels last seen in the 1950s. Many previously busy thoroughfares, such as Oxford Street in central London, have now been switched to allow trams, bicycles and buses only.

The public discourse around ‘doing your bit for climate change’ has led to a resurgence of nationalism, which has led to many long-term immigrants returning to their countries.

How does society allocate responsibility for healthcare?

Just as in wartime, there has been a cultural shift towards a greater feeling of community. It is understood that the government prioritises the NHS and people feel united in wanting to see an improvement in their local hospitals. Indeed the feeling of social responsibility means that people are taking responsibility for their health to a greater extent than ever before, and to such an extent that they start to rely more on themselves, especially those living in rural areas.

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The rationing of carbon-intensive services and a switch to low-carbon provision where possible has meant that high-quality palliative care (of which much is provided by community groups) has replaced high-carbon interventions at the end of life, and organ transplants and the like are now seen as a luxury.

The NHS offers a limited menu of health treatments and carbon rationing means that the carbon impact of all treatments is known and used in deciding which treatments to apply and where to treat – for example there are travelling services which take certain treatments to patients in their home, where this will have a lower carbon cost than replacing anything faulty. As these changes have affected society equally, they have combined to have a positive impact on health inequalities because everyone faces the same limitations on what they can access. Limitations on travel overseas and similar responses to climate change in other countries mean that even the richest people struggle to find better care elsewhere or on the black market.

What is a no-frills health service?

The overarching focus in this scenario is on reducing greenhouse gas emissions as much as possible, as easily as possible, and as quickly as possible. This would necessarily lead to a lower priority being placed on healthcare. There would be less money for expensive operations and carbon-intensive treatments. Staff would be encouraged to ‘make-do and mend’, reusing equipment more, where appropriate, and repairing rather than replacing anything faulty, in a centralised and self-sufficient world, the health system would also inevitably be funded by central government taxation, with little opportunity to channel funds or care through the private sector.

Grey market healthcare?

Due to a lack of funds, many conditions that were treated in 2009 would go untreated in 2030. People with minor complaints would often have no choice but to put up with them. Many people would be forced to live with discomfort, or worse. In a likely, however, that a grey market in healthcare would emerge; at one end of the scale, community-based care groups set up to fill the gap left by the retreat of the health service, at the other, high-status ships and poorly executed, unregulated care.
Hospital services are much reduced these days so we now have our own local care services, like the mobile diabetes screening van — it visits all the local towns and villages in the area. The screening clinic is organised by the local diabetes network of volunteers and charities and the service is free, paid for by fundraising and sponsorship from local business.

Fortunately, I decided to pop in that day for the free blood test and following a couple more tests I found out that I have Type II diabetes.

After a few years I had to start taking insulin. I’ve been contributing to my local wellness programmes, facilitated by the community diabetes health network, so I continue to receive treatment for free.

I was hoping there might be some kind of cure for diabetes by now but health technology hasn’t progressed in years — they still prescribe these active transdermal drug patches and they’ve been around for about 15 years now! It could be worse I suppose. They patches last for a week and deliver a once-daily dose of insulin. I think they’re the most reliable and effective way to take insulin — there’s much less wastage than with syringes and I no longer need to monitor my blood glucose levels either.

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I’m glad I qualify for free treatment — there was one chap on the local news who didn’t meet the ‘healthcare rationing’ criteria because of his unhealthy lifestyle. He couldn’t afford to buy directly from the NHS so bought his treatment on the grey market. Unfortunately he ended up with counterfeit medication and he almost died.

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I don’t mind going online to use the NHS tele-health network, but I do wish sometimes I could actually sit down and talk face to face with a professional diabetologist. Of course, with all these resource constraints and shortage of specialists, there’s no way I could do that!

My official ‘care buddy’, Elsa was assigned to me by the community diabetes health network to help me manage my diabetes, and she’s become a really good friend. We have plenty to talk about beyond diabetes!
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5. Creating healthcare systems that are fit for the future

What should we do in anticipating the very different futures described in the previous section?

The four scenarios outline different political and social responses that the UK might make to the challenge of climate change in the next 20 years, and the implications these responses have for health and healthcare. The ‘real’ future is unlikely to mirror any of these exactly, though it is likely to contain elements from each of them at different times and places.

To build a healthcare system that is fit for the future, strategic planning needs to take account of a range of different possible futures. Climate change is the greatest challenge facing our society at the moment, but the NHS also faces a number of other pressures in the coming years including patient safety issues and shrinking budgets. This report argues that a low-carbon NHS is a more efficient NHS, and that if the service is to provide the best possible quality of healthcare in the future, it must build both its efforts to mitigate climate change and its resilience to that change.

Though each future scenario is very different, looking across all the scenarios we think there are five key steps to creating a resilient health care system today, whatever the future holds.

1. Support people in taking responsibility for their own health
   In most of the scenarios we see people taking more responsibility for their own health: in ‘Redefining Progress’, ‘Service Transformation’ and ‘Environmental War Economy’, individuals take much greater responsibility for their own health and communities play a large role in providing care.

   The factors driving this shift and the shape it takes are different in the different scenarios, but it’s only in the ‘Efficiency First’ scenario that it doesn’t feature, where instead people focus much more on choosing high-tech treatments. However, this leads to large degrees of health inequality so is not a positive element within this scenario.

   Supporting the shift to greater personal responsibility will be important against the backdrop of declining budgets and a need for greater resource efficiency.

   Empowering people to take responsibility for their own health supports a shift towards an approach that prioritises prevention. Improving health literacy of the population will create the conditions in which preventative techniques can flourish. Similarly, enabling communities to play a role in healthcare provision — for example with end-of-life care — could free up resources for acute care provision.

2. Build greater acceptance of ICT in healthcare provision
   In all our scenarios ICT plays a major role in the delivery of healthcare. This is in the main due to high carbon prices, which make transport and carbon-intense facilities, such as hospitals, very expensive. There is an expansion of tele-health services which are likely to be cheaper.

   Many of these technologies currently exist. They range from services like NHS Direct, and tele-care services for the elderly in rural areas, through to the possibilities of remote surgery conducted by robots.

   But they are not yet as widely spread as in our future scenarios. The challenge is gaining acceptance — from both patients and clinicians — of such technologies as an acceptable form of healthcare delivery. Only by fostering such a cultural shift will the possible benefits from these technologies be realised by the NHS and its patients.
3. **Work to find the low-carbon / high quality of life sweet spot**

In both ‘Service Transformation’ and ‘Redefining Progress’ we see examples of where low-carbon living leads to improved quality of life. In ‘Service Transformation’ cleaner transport and industry leads to fewer respiratory complaints, in ‘Redefining Progress’ we see a focus on wellbeing which leads to a reduction in diabetes and obesity.

The NHS has been in a prime position to see the impacts of our carbon-intensive lifestyles on our health and wellbeing over time, and much has been written about so-called ‘diseases of affluence’.

The Service is also in a prime position, therefore, to take a leadership role in showing that low-carbon lifestyles can have a positive impact on our health. Working in partnership with other organisations — such as local authorities and businesses — the NHS can help find the low-carbon sweet spot in which a shift towards lower carbon lifestyles improves our quality of life.

4. **Allocate resources to promote health rather than treat illness**

Each of the scenarios provides a compelling case for the NHS and Department of Health to radically shift resources towards upstream prevention, rather than treatment, of illness.

High carbon prices in all the different ‘worlds’ put pressure on the public purse meaning that healthcare spend has gone down. ‘Efficiency First’ is the only one of our worlds in which GDP has risen, but even in that world the increased spend on technologies to deal with climate change means that there is little left in the public purse for healthcare.

The conclusion we draw is that even when the current economic crisis is over, the pressure on health service budgets is going to continue into the future.

Allocating resources towards prevention and promotion of health will save a lot of money in the long run and future-proof health services against long-term reduction in budgets. Currently the NHS only spends 4% of its income from taxpayers on prevention and public health. Our scenarios show that future planning should consider increasing this to a much higher proportion of healthcare spend.

5. **Ensure the healthcare system takes a leadership role in the radical change we need to face climate change**

It’s clear from these scenarios that we all need to prepare for a radically different future and that business as usual is not an option for any organisation within society. As the world starts to adjust to the reality of climate change and moves to radically decarbonise, we’ll need to find ways to break our dependence on fossil fuels for energy. Achieving this will lead to dramatic changes in everyone’s lifestyle.

The NHS needs to play its role in this change: it can’t assume that change is someone else’s responsibility. With its massive size and reach, the NHS has the potential to play a leadership role and the ability to help shape the future.

The scenarios show that there can be positive health impacts from a proactive response to carbon reduction. The scenarios where carbon is reduced gradually — such as ‘Redefining Progress’ and ‘Service Transformation’ — are more positive from a patient and provider perspective than the dramatic reduction in ‘Environmental War Economy’.

Just as GPs giving up smoking had a significant effect on smoking rates, NHS leadership on carbon reduction and climate resilience could be highly influential for the rest of society. Taking a leadership stance on this issue will require a cultural shift within the organisation to one where staff at all levels accept the likelihood of radical change and embrace it — and reframe climate change as an opportunity for the service rather than a threat.

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9 Based on 2006/2007 figures.
6. How to use this report

Thinking about the future

The scenarios are a plausible range of different possible futures. Reading them, you may think that none is very likely to ever become reality. But there are two things to consider before setting them aside and moving on.

Firstly, the future is uncertain. There have been countless events and changes in history that were not anticipated, and equally as many predictions that proved completely wrong. How many people called the recession of 2008-9? How many people confidently predicted the way that they would have? Sometimes the scenarios may even seem bizarre or contradictory, but the health system of 2009 easily appears in a similar light to a visitor from decades in the past.

Secondly, the scenarios aren’t supposed to be predictions. They explore possible future trends and events that could unfold in one direction or the next. To plausibly they should also be procedurally grounded and knowledge about current trends and how they might change into the future. People have therefore been built in consultation with healthcare experts, and not simply conjured out of thin air.

Nonetheless, for the scenarios to serve their purpose as starting points for conversations about what our future health system might look like they need to be exercises in asking “What if?” They set aside suspicion for a period of time and help people to prepare for the future—which whatever it holds—will certainly be different from today in unexpected ways.

Questions to ask

There are lots of ways of using scenarios. Here are some suggestions.

Use the scenarios to develop new strategies:

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Secondly, the scenarios aren’t supposed to be predictions. They explore possible future trends and events that could unfold in one direction or the next. They’re also supposed to be more than just a guess about future plans, like the parameters that go into a forecast. Use the scenarios to generate new ideas.

Use the scenarios to stimulate partnership working:

Early drafts of the scenarios proved a lively basis for discussion among health sector managers and stakeholders. The scenarios are intended to be used in combination with other organisations within and beyond sector to debate future collaboration – as a way of exploring common aims and identifying differences in approach, and for long-term planning. Ask what collaboration between partners could achieve in addressing health issues in the different scenarios in which actions are common in the different worlds as a way of planning next steps.

Use the scenarios to stimulate innovation:

The scenarios are a useful test of current modes of service provision. Consider what services no longer work in the different worlds? Which modes of provision are most vulnerable to change? What new opportunities emerge as a result of considering different futures?

Use the scenarios to test your current plans and processes:

If current plans didn’t change, would they succeed in all scenarios? Which scenarios would they succeed in, and why? What are the strengths, weaknesses, opportunities and threats for your plans in each scenario? How could your plans be changed to be successful in a range of possible futures? Can you do the same with your policy, product or service decision?

Use the scenarios to help form your own vision of the future:

Discuss what changes you would like to see in healthcare. Set objectives and an action plan to achieve them, and then test the objectives and action plan against four different scenarios. Or take the elements of each scenario that you like best, and use them to form a new, preferred scenario.

Questions to ask

There are six aims of using scenarios. Here are some suggestions.

Use the scenarios to develop new strategies:

What are the risks and opportunities presented by each scenario and how can the risks be managed and the opportunities seized? What are the opportunities for you?

Use the scenarios to test your current plans and processes:

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Use the scenarios to develop new strategies:

What are the risks and opportunities presented by each scenario and how can the risks be managed and the opportunities seized? What are the opportunities for you?

Use the scenarios to test your current plans and processes:

If current plans didn’t change, would they succeed in all scenarios? Which scenarios would they succeed in, and why? What are the strengths, weaknesses, opportunities and threats for your plans in each scenario? How could your plans be changed to be successful in a range of possible futures? Can you do the same with your policy, product or service decision?

Use the scenarios to help form your own vision of the future:

Discuss what changes you would like to see in healthcare. Set objectives and an action plan to achieve them, and then test the objectives and action plan against four different scenarios. Or take the elements of each scenario that you like best, and use them to form a new, preferred scenario.

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Formed in April 2008 its first objective was to create a Carbon Reduction Strategy for the NHS in England. “Saving Carbon, Improving Health” was launched in January 2009 and sets out the NHS’s commitment to meet major reductions in carbon emissions in line with UK and international targets. The SDU is helping the NHS reach those goals by shaping policy and raising awareness across every level of the organisation.

Fit for the Future compliments the Carbon Reduction Strategy by highlighting the need for the NHS to be a good corporate citizen by reducing its carbon footprint. The NHS is responsible for over 18 million tonnes of carbon dioxide per annum, one of the largest public sector emitters of CO2 in the world. It has economic and ethical obligations to reduce its impact on the environment not only for public health but for its own health and long term survival.

Project team: Hannah Greensmith, Fiona Head, Karl Heidel, David Pencheon, Sonia Roschnik, Sarah Wright.

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