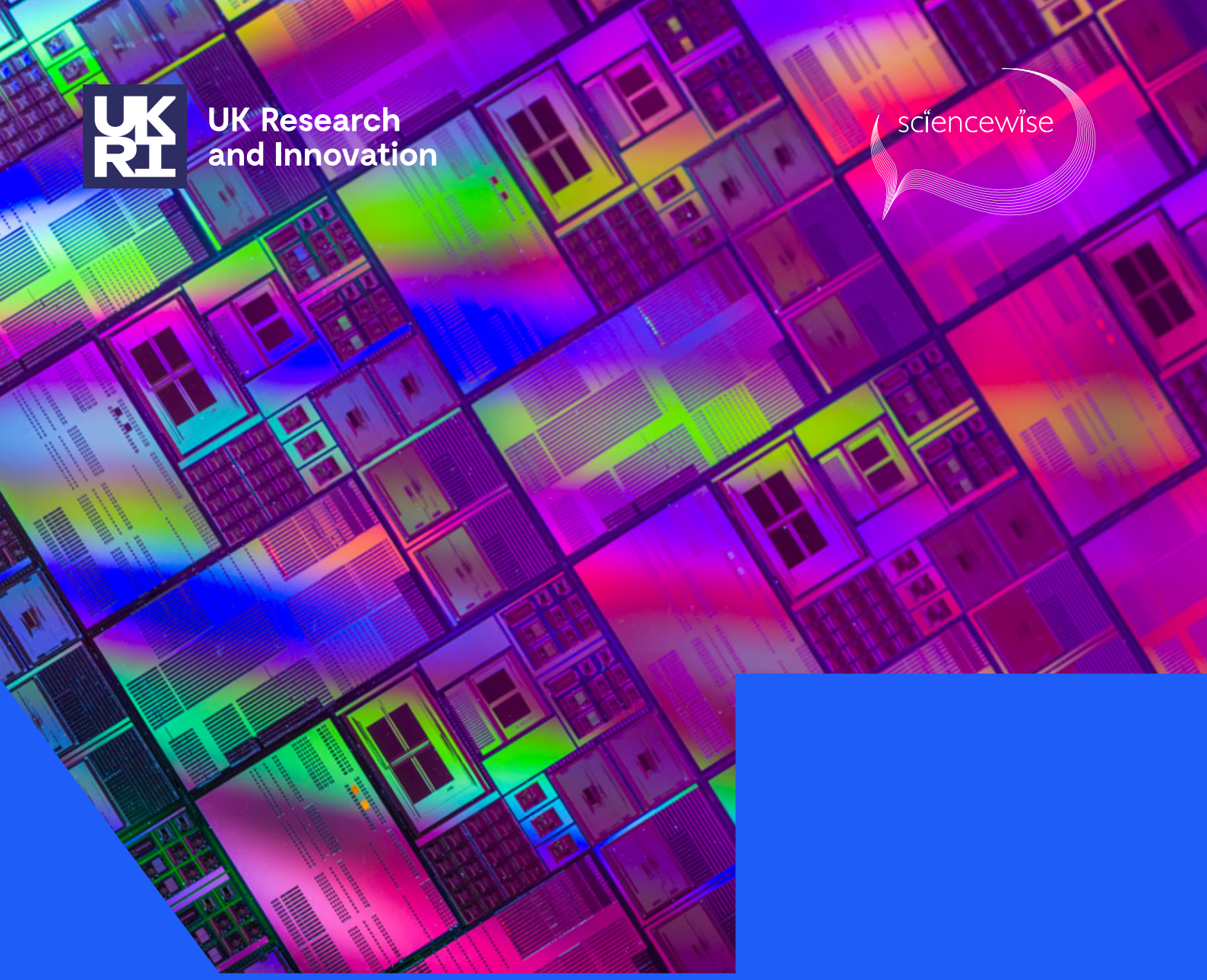

UK Research and Innovation

sciencewise

What do the public say about the role of science and technology in society?

A synthesis of insights from 50 Sciencewise public dialogues

The UKRI Sciencewise public dialogue programme connects the public with science and technology, leading to better research, better policy and better outcomes.

Reports published on over 60 Sciencewise public dialogues, carried out with UK Government, the Research Councils and third sector organisations, have had major impact on UK science and innovation policy and research.[1]

These reports represent a significant body of evidence about public views and preferences on socially important scientific and technological questions.

About this report

This report summarises the four other reports in this series which take stock of what we know about public perspectives in different areas of science and technology[2,3].

The series as a whole is intended to be a resource to support policy makers and research funders by providing them with evidence about public perspectives which can be built on as future dialogues are commissioned and designed.

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1 See forthcoming Sciencewise report: 'How can public dialogue deliver better outcomes? Key impacts from UKRI's Sciencewise programme'.

2 The four reports in this series each focus on one of the Sciencewise priority themes. The four themes are:

- Climate and Environment: How can society live sustainably?
- Data, AI and Robotics: How should society shape the digital world?
- Health, Ageing and Wellbeing: How should society live healthy lives?
- Life Sciences and Biotechnology: How should society shape the future of life?

3 The thematic reports draw on evidence from nearly 50 Sciencewise supported public dialogues that were conducted over the last decade.

What do the public say about science and technology overall?

While the topics explored in Sciencewise dialogues are diverse, the consistency in the overall findings is striking. Participants generally arrive at the first event of a dialogue with limited knowledge about the detail of how science and technology developments occur, and have lots of questions about how they can contribute to key debates.

Over the course of their deliberations, they build their understanding, and are able to articulate their views about the role of science and technology in society, how the benefits can be maximised and how risks or harms can be reduced.

Common themes across many of Sciencewise dialogues include:

- **Avoid perpetuating or exacerbating inequalities:** it is the view generally of the public that innovations in science and technology can benefit society. However, a key concern is that the rollout of new science and technology could perpetuate or even exacerbate inequalities. Participants are aware that, just because everyone could benefit, it does not mean everyone will benefit. It is crucial for them, therefore, to ensure that the technologies are affordable, accessible and available to all. The main groups of people that participants are concerned about include people with low incomes, older people, and people from minority ethnic backgrounds. Participants are also concerned about geographic inequality (i.e., where there is no national roll out of a technology). Where such variation is unavoidable (e.g. not every area will have a carbon capture facility), they want to ensure that benefits such as employment are accrued locally to balance the potential downsides.
- **Ensure clear benefits to society and plan for unintended consequences:** In most dialogues, participants explore benefits and risks, and where they are convinced of the benefits, they are more willing to accept an element of risk. This is particularly apparent in health, where the benefits of identifying and treating people earlier are more easily understood. In dialogues on other themes, as people spend more time exploring the topic, they often come to the same conclusion. Where the benefit to society is not clear, and may only be for an individual who can afford it or a private company that can profit from it, participants are far less comfortable with supporting development or implementation of the science or technology. Participants also want to be sure that planning for unintended consequences is carried out.
- **Prioritise natural solutions before intervening with science and technology:** People value the natural world and like to spend time with nature. They are nervous about more technical solutions, especially when they are being used to address a problem which is an unintended consequence of a previous technological 'advance'. Nonetheless, where the impact of natural solutions does not match the scale of the problem (for example, curing illness or reducing CO2 in the atmosphere), people are open to more innovation. They are less keen on innovation which is perceived to be 'for the sake of it' or is perceived to be unproven or not cost-effective.
- **Ensure effective regulation and governance, especially for businesses:** due to the perceived risks of science and technology development, and an inherent distrust of some of the players involved (specifically the pursuit of excessive profits in the private sector), people want to see strong, influential, and independent regulation to ensure their interests are protected. They worry that without supervision there will be temptations to cross red lines (for example, the slippery slope to so-called designer babies or profiteering from people's data) and to deviate from the mandate to explore science and technology that is in the best interest of society. Ultimately, they want this supervision to have teeth, with ramifications for any individual or organisation which steps outside the agreed parameters.

- **Support people to benefit from technology:** Throughout the dialogues, individual choice and consent has remained important. While participants often give the green flag for research to continue with caution, that does not mean they believe individuals should be required to accept the technology or treatment that results. They advocate for high quality information, and (where appropriate) incentives and support for people to change their behaviours, but ultimately believe individuals should make the final decision about using new solutions in their health, their homes and their lives.

Underlying these themes are a set of assumptions which emerge in most Sciencewise dialogues

1. The first is explored in abstract in the descriptions of the themes above, that scientific research and innovation is being carried out *for the public good*. How this is defined depends on the topic of the public dialogue, but dialogue participants expect that the wider public should see some positive outcome from the implementation of the emerging innovation in addition to those doing the innovating. In most public dialogues, **public benefit would be assumed to accrue to the wider population** in terms of better health, higher living standards or wellbeing, or a more sustainable environment. However, participants may also identify public benefit where a smaller group of people stand to benefit, for example treating mitochondrial disease which affects a small number of children every year.

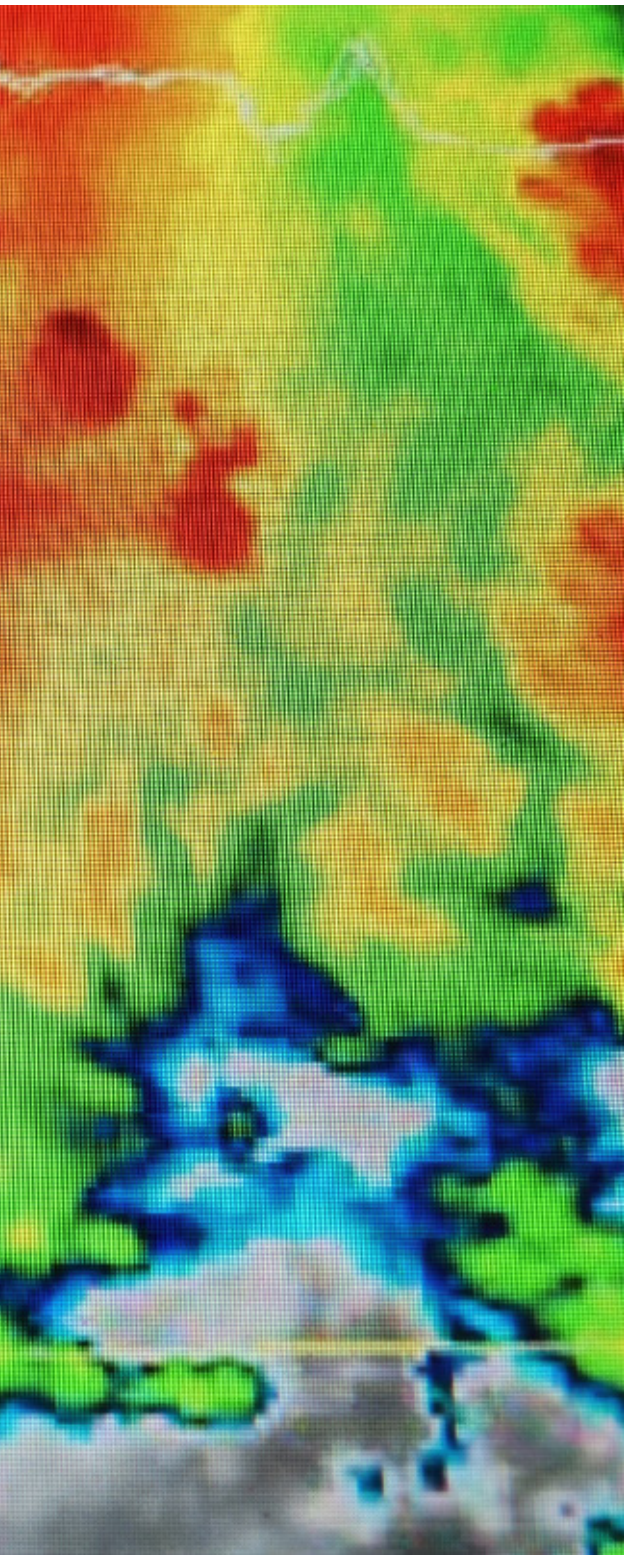
2. The second assumption is that the public consistently assume that technology and innovations developed through research *will only* be rolled out **if they can be proven to be safe and effective**. If there is any doubt about the safety, or about whether or not the solution will work, as a minimum people would like to see more research undertaken until these doubts can be addressed and seek reassurance that this will be the case.

3. In addition, once they have found out more about the policy challenges and the role of technology in contributing to their solution, the public often think it is important that there is **sustained public education and engagement on these issues in the future**.

In the next section of this report, we summarise the findings of the four thematic reports.

How can society live sustainably?

The Sciencewise Climate and Environment theme explores a broad set of issues focused on how society can live sustainably, particularly in the context of climate change. The dialogues considered here are those since 2010, on subjects including renewable energy sources, the future of cities and of homes, the food system, nuclear power, geoengineering, and carbon capture, usage and storage.



Given the public's interest in considering nature and 'natural solutions' alongside those which are more 'technological' (something explored in more detail below) the report also draws on dialogues focusing on biodiversity and the natural world, including water management, ecosystems, and living with environmental change.

Public preferences around climate technologies are often driven by a personal understanding of the climate and climate change. The public are more likely to be supportive of technologies which they are familiar with, or which appear to be more in tune with nature as this is often linked to perceptions of safety.

However, when the public understand the scale of the challenge posed by climate change, they are more accepting of solutions they perceive to be more 'technological'. Often, they see these technologies as important for dealing with the immediate problem of climate change, as part of a pathway to a world where solutions they see as more natural have become the norm.

As with other technologies, the public see benefits as well as risks arising from the development and application of climate technology. In particular, they see potential benefits to the economy and for employment, but are keen to see that these are realised equitably.

While the public are willing to take action to address climate change, they can also see the limits of the impact individuals can have and the risks to them if not adequately supported by society and government. This can be mitigated by such measures as information to support people to make more informed choices, through to financial support to help people to make necessary investments to change their homes and lifestyles.

How should society shape our digital world?

Data, AI and robotics is a broad theme that covers a set of interconnected issues. Sciencewise work within these topics is dominated by a focus on data. Sciencewise dialogues have also looked at data-driven transport and mobility including autonomous vehicles and drones.

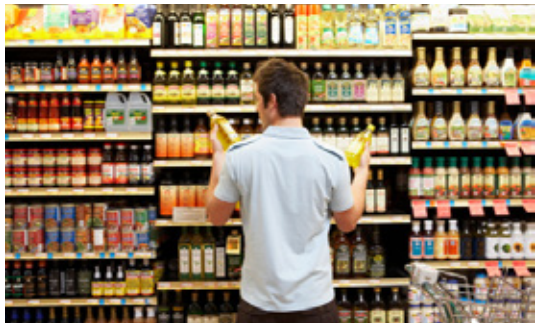
Public concerns about ensuring the fair distribution of both risks and harms is evident across Sciencewise dialogues focusing on the use of data, AI and robotics technologies. The public often show a specific concern about the impact of these technologies on vulnerable individuals and communities. This is most evident when they consider the role of business in using data or developing and implementing AI and robotics. They are generally comfortable with a role for business where public benefit can be assured and profiteering does not dominate decisions.

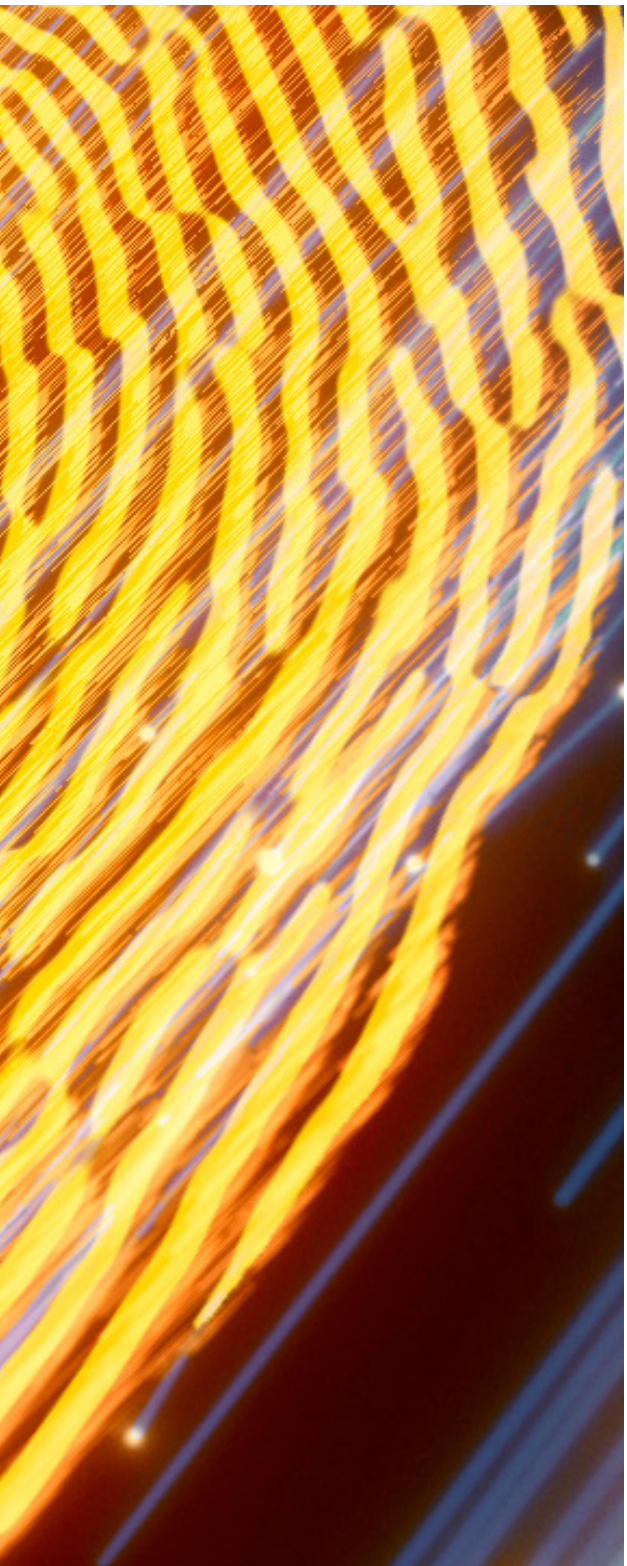
Sciencewise dialogues frequently demonstrate that the public can be uncertain about what data is collected, how it is used and who it is shared with. They think it is important that they are provided with information that allows them to understand this, and to be able to give informed consent. They also want clear accountability for where harms occur.

1 These dialogues explore public perspectives on the societal and ethical implications associated with the collection, use and sharing of data.

How should society live healthy lives?

The theme of health, ageing and wellbeing explores the role of science and technology supporting us to live healthy lives. Many of the dialogues explored public perceptions of health and health research, and address perceptions of the use of health data for these purposes. Other dialogues explored routes to health and wellbeing generally, or specifically through healthy food, good housing, or by using wellbeing as a frame to support effective policy-making.





The insights derived from Sciencewise public dialogues demonstrate that science and technology is valued in health and care. Overall people are often supportive of new innovations as long as there are appropriate safeguards in place.

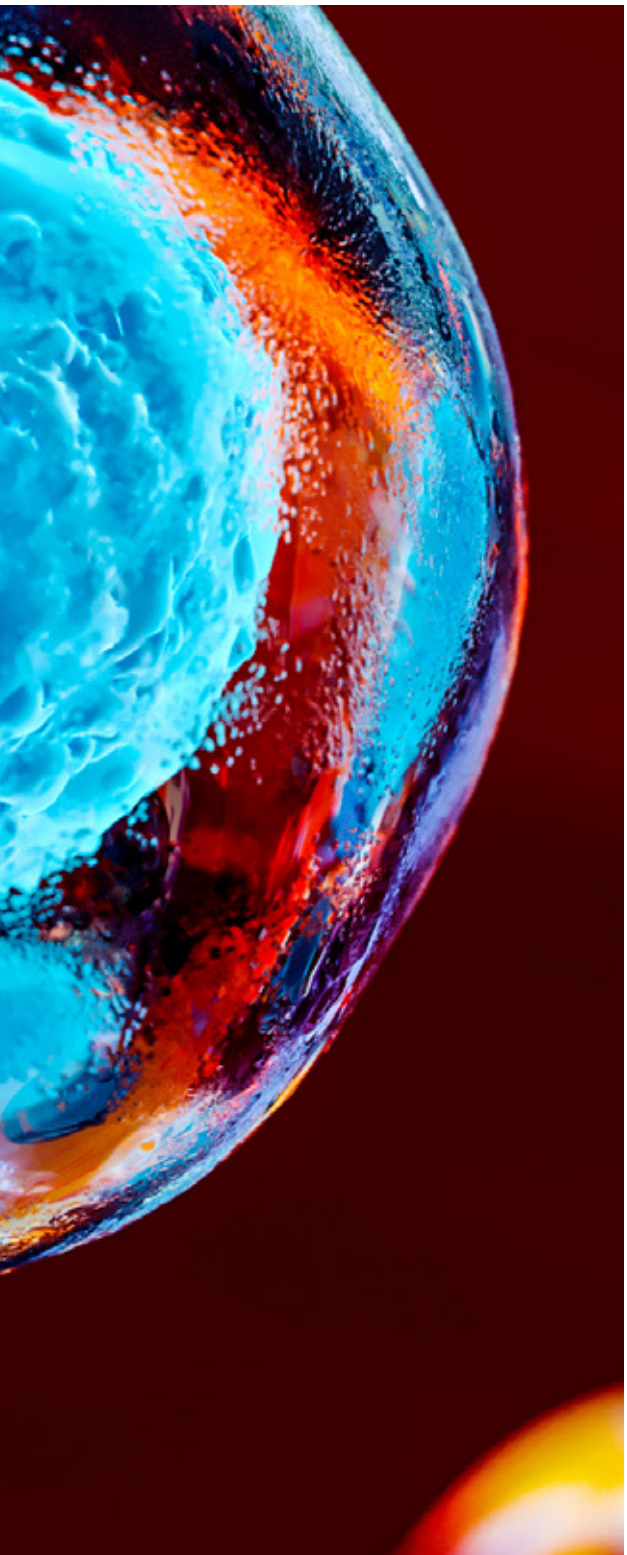
Sciencewise dialogues clearly show that health, ageing and wellbeing is very personal – not only do dialogue participants think in terms of 'my body', 'my choice', but also 'my food', 'my house', 'my wellbeing'. While people believe the common good is often served by encouraging and supporting scientific and technological development, this does not necessarily mean they are willing to commit to being early adopters when such developments become widely available.

While people can see the benefit of science and technology, they are not welcoming it into their lives with open arms, due to concerns about personal risk, cost or a lack of incentive to change. Rather, they are cautiously optimistic and believe strongly that it should be an individual choice whether or not to embrace new technologies on a case-by-case basis.

In some of the dialogues, we have explicitly set out to recruit people with particular interests (e.g. people living in sub-standard homes, people with particular health conditions) to develop greater insight. During these dialogues there is a significant emphasis on the impact on our personal lives and the level of behaviour change that might be required.

How should society shape the future of life?

The life sciences and biotechnology which is important across a range of sectors including human and animal health, food production, and medical research. A number of Sciencewise dialogues have explored the application of these technologies in agriculture, research using animals, and synthetic biology, as well as the use of genomic science.

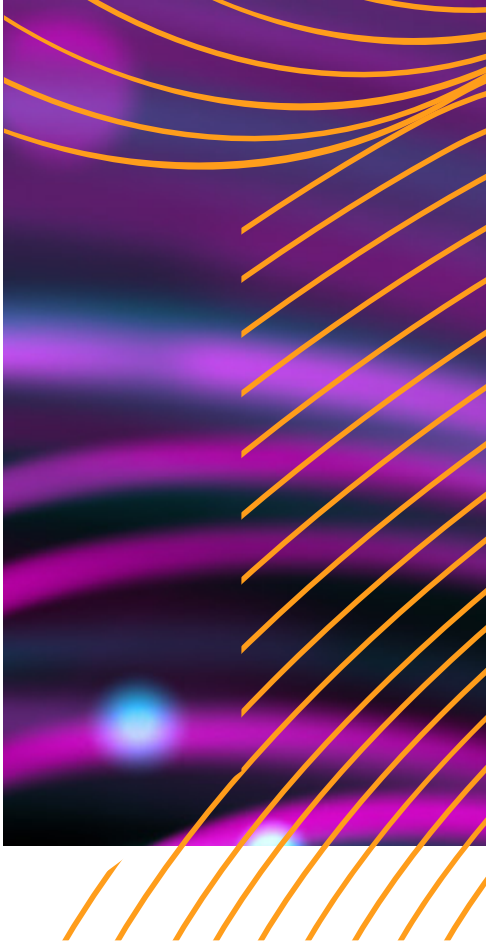


In those dialogues which have explored technologies being developed or applied to human health, there is a strong focus on the implications of the data which is collected, used and shared.

The research, development and rollout of any life science and biotechnology is viewed by the public as both carrying significant potential benefits and specific risks. Dialogue participants are most often concerned that existing inequalities could be increased, and new inequalities created, if proper care is not taken.

Another commonly expressed concern is that private interests, such as the desire to pursue the greatest profit, might negatively shape how life sciences and biotechnologies are developed, including who they are designed to benefit and who has access to them. However, the public sees an important role for the private sector in developing the science and technology in this area.

In terms of safeguards, the public wants to see robust regulations which both help ensure that societal benefits are secured and that the public's concerns are mitigated against. This governance should serve to meaningfully connect science and technology with the social reality of people's lives.



Conclusion

This report has been produced based on the data included on the Sciencewise website. A spreadsheet was compiled which outlined every dialogue conducted, the theme and main impact as identified on the webpage. Based on this information, the impacts were grouped thematically to aid reporting.

Once the basic structure of the report and key impacts were agreed, further work was done to find evidence of impact within the evaluation reports and case studies also published on the Sciencewise website.

Finally, Sciencewise has recently changed its approach to evaluation – allowing longer between the end of the dialogue and the evaluation close, in order to better understand the impacts. Therefore, the recent evaluation reports were used to identify key policy papers and guidance which made explicit reference to the dialogue and links were added to the report.

By its nature, this approach was limited to compiling what is already known about the impact of dialogue. Future work could include a more robust contribution analysis, rather than relying on stakeholder feedback. Nonetheless, the weight of qualitative evidence included in this report, and the fact that people who have commissioned dialogue often become repeat customers, gives us confidence that the dialogue approach is valued and is having a real impact on science and technology in the UK.

About UKRI Sciencewise

- The report is commissioned by Sciencewise, a UKRI funded public dialogue programme that supports government departments and other public bodies to listen to and act on diverse voices, to shape science and technology innovation policy and priorities. Important benefits of the programme include:
- Helping decision makers to formulate policy with a deeper understanding of public views, concerns and aspirations;
- Supporting high quality, best practice public dialogue; and
- Bringing credibility and independence to public sector-led public dialogue projects.
- Further information on the Sciencewise programme including impact case studies can be found at the following link: https://sciencewise.org.uk/
- To get in touch please contact: simonburall@sciencewise.org.uk and graham.bukowski@ukri.org

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