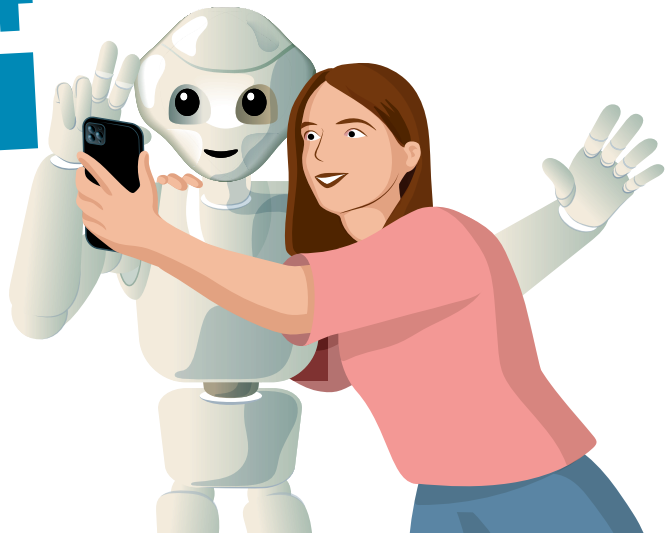
Technik Radar 2024

Focus:
Trends in attitudes
to technology

What Germans think about technology



A study by

acatech
NATIONAL ACADEMY OF SCIENCE AND ENGINEERING

Körber Stiftung

University of Stuttgart
ZIRIUS – Center for Interdisciplinary Risk and Innovation Studies

Data from previous surveys (2017, 2019, 2021 and 2022) were compared and evaluated for TechnikRadar 2024. Around 2,000 randomly selected German-speaking people aged 16 and over living in Germany were surveyed by telephone by INFO GmbH Markt- und Meinungsforschung. The methodology used is described in detail in the long version of the study on which this summary is based.

en.acatech.de/technikradar koerber-stiftung.de/en/projects/technikradar/

Technik Radar 2024

Was die Deutschen über Technik denken

Summary of results

About TechnikRadar

While technology is a key driver of innovation and at the same time a guarantor of prosperity in Germany, it also has the potential to help solve global challenges. But technology is also fundamentally changing every aspect of how we live, learn, work, consume, communicate and get about. And these changes are being met in part with scepticism, in part with approval. acatech – National Academy of Science and Engineering, the Körber Stiftung and the Center for Interdisciplinary Risk and Innovation Studies (ZIRIUS) at the University of Stuttgart conduct TechnikRadar as an annual analysis to investigate German attitudes in this area of potential conflict. Do Germans tend to associate technology in its various forms and applications with hope or unease? Which new technologies do they welcome and which do they reject? What conditions have to be met for people to be open to technological change?

TechnikRadar (Technology Radar) is a regular, nationally representative survey developed in line with social science standards and evaluated using empirical social research methods. As a long-term early warning system,

it identifies any missteps in technological change in good time and indicates where there is a particular need for communication. At the same time, TechnikRadar aims to support innovation processes so that products and technologies are in tune with citizens' expectations. The results provide a sound basis for a debate around the significance of technical innovation, associated regulatory requirements and options for shaping future innovation.

TechnikRadar 2024 focuses on possible changes in attitudes investigated in the previous surveys in 2017, 2019, 2021 and 2022 in the light of various crises and debates: which topics are seen as the most important future tasks for Germany? Which technologies are more associated with benefits, and which more with risks? What changes have there been in general attitudes to technology? And how much do citizens want to play an active role in shaping technological development?

This booklet summarises the main trends in Germans' attitudes to technology over this period. The full version of the study can be downloaded from: en.acatech.de/technikradar koerber-stiftung.de/en/projects/technikradar/

Trends in attitudes to technology: Intergenerational differences widening

Evaluation of the previous TechnikRadar surveys reveals the following trends relating to „What Germans think about technology“:

- The significance of age as an influencing factor increased significantly between 2017 and 2022. Younger people were less critical of technology, but also less willing to make restrictions in favour of the environment.
- Gender differences are considerably less marked but still basically subsist. For example, women showed a much greater willingness to limit their consumption to positively impact the environment.
- Formal education influences the expectation that technology will lead to ever greater problems in the long term. The academically educated are less likely to fear such a development than those without an academic education.
- Assessments between eastern and western Germany have converged over the course of the surveys, more so than between people in rural and urban areas. Nevertheless, there is still a stark difference in the assessment of climate issues.
- The specific context in which a technological innovation is applied has a particularly strong influence on perception of technology: robots in the care sector, for example, are viewed much more negatively than robots in construction.

“The more technology develops, the more pressure bears down on people.”

TechnikRadar 2024

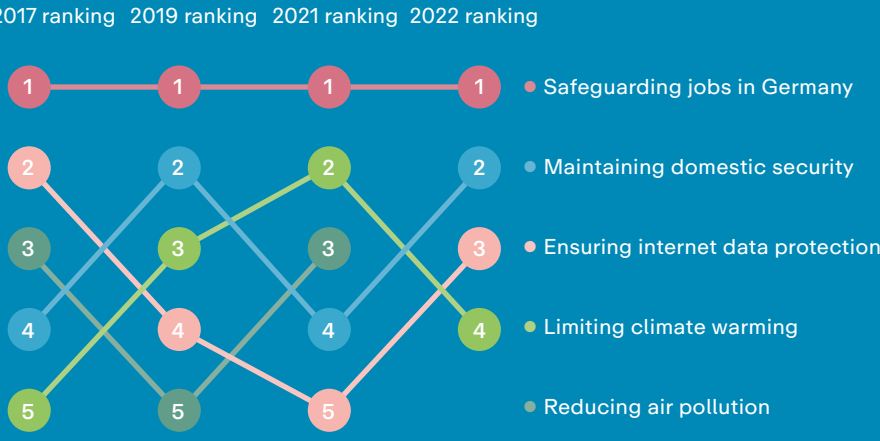
Average values on a scale from 0 (complete rejection) to 10 (complete agreement)

The most important tasks for the future: Safeguarding jobs is the top priority across the board

Safeguarding jobs has been the number one most important task for the future of Germany from the very beginning of the surveys. Respondents also attach great importance to other tasks, but there is continuous change among the top positions. For instance, limiting climate warming was still in fifth place in 2017, rose to second place in 2021 before slipping back to fourth place in 2022.

The respondents react to the major debates in society around the coronavirus pandemic, Germany's Heating Act and how to deal with rising energy prices. The differences in assessment between the age groups and between the academically and non-academically educated have tended to widen since 2017 when it comes to the importance of domestic security, data protection and job security in Germany. Women and men and east and west Germans have tended to converge in their assessment of future tasks. Climate protection is where there is the least convergence.

Prioritisation of future tasks for Germany



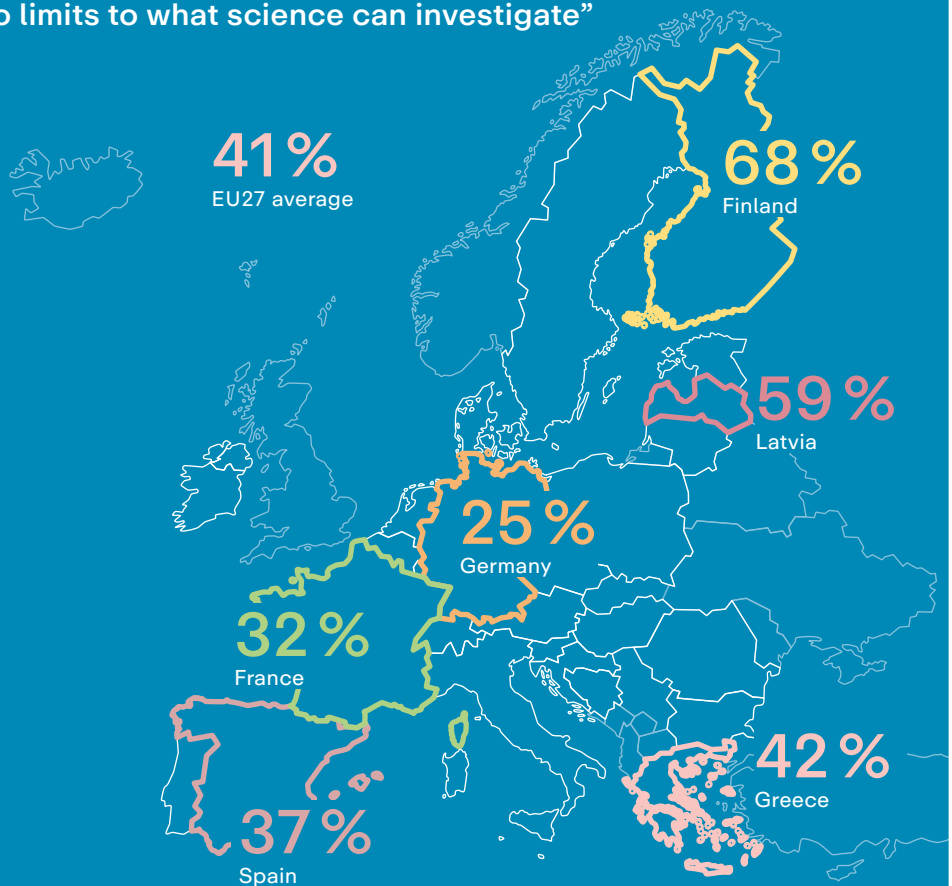
Germans compared with other Europeans: Sober and nuanced, optimistic in the long term

Germans are widely thought of as being particularly technophobic. In actual fact, compared to the European average over the period of the TechnikRadar surveys to date, Germans are more critical and more nuanced when it comes to the problem-solving potential of technology and the idea of unrestricted freedom of research.

Particularly enthusiastic as well as very pessimistic attitudes towards technical developments have declined in recent years. Overall, a move towards attitudes which are more nuanced depending on application can be observed. Today, Germans are fundamentally open to technological innovation, but at the same time critically question whether an innovation is actually proving itself in practice.

One striking feature is that, compared to the rest of Europe, Germans are somewhat more optimistic about technology with regard to the long-term consequences of technological progress.

Agreement with the statement “There should be no limits to what science can investigate”



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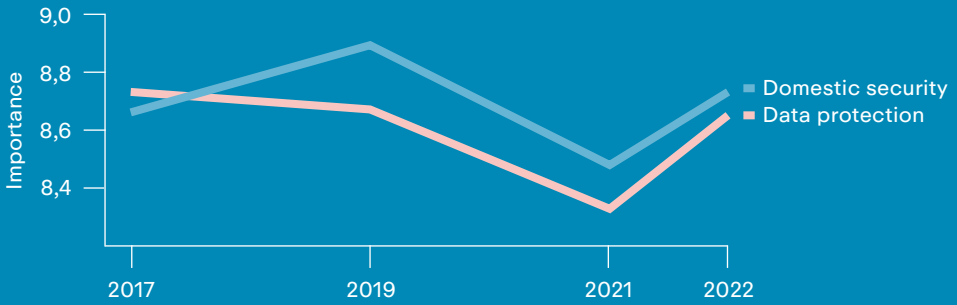
Data basis: selection from Eurobarometer 2021

Data protection and domestic security: Pandemic-related decline in importance not permanent

Germans have perceived maintaining domestic security and protecting personal data on the internet to be a high priority since the start of the TechnikRadar surveys. However, the survey results for 2021 revealed a clear downward trend for both issues. At that time, more than half (52.2 %) "strongly agreed" or "somewhat agreed" with the statement "The coronavirus pandemic has made it clear that data protection excessively complicates practical solutions", while only around one in seven respondents (14.6 %) "somewhat disagreed" or "strongly disagreed". Fewer residential burglaries and thefts during the pandemic probably also significantly reduced the importance of domestic security in 2021.

However, this change in opinion did not last long: once the restrictions were lifted, the negative effects of the prevention measures implemented were widely discussed. Priorities in debates have shifted, including towards the need for more climate protection. As the survey results for 2022 clearly reveal, domestic security and data protection in particular regained importance with the end of the pandemic.

Data protection and domestic security as a task for the future



TechnikRadar 2024

Average values on a scale from 0 (not at all important) to 10 (very important)

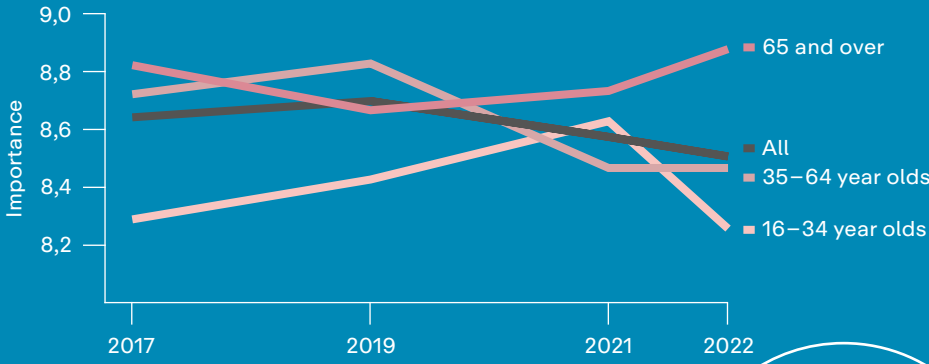
Significance of climate protection in Europe: Young and old in Germany more polarised

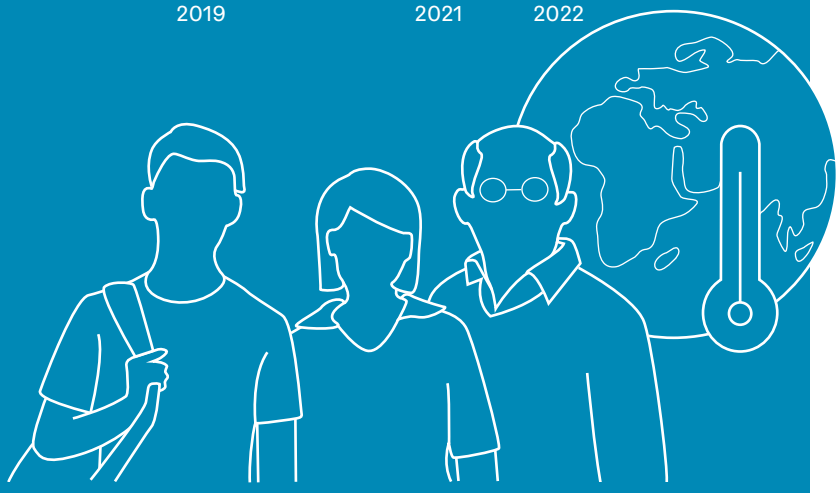
Limiting climate warming was a consistently important concern for Germans between 2017 and 2022. In comparison with other European countries, however, the trend in Germany has an unusual feature:

Across Europe, the age groups are united in their assessment of the importance of limiting climate warming. In Germany, on the other hand, there is a much greater divergence between the age groups. The behaviour of the youngest group (16 to 34 year olds) is opposed to that of the oldest (over-65s): while the importance of this task had initially increased over the years in the first group, it dropped back significantly in 2022 to below the initial value. This is due in particular to the sharp decline in priority among 16 to 24 year olds. The situation is very different among the oldest, with the over-75s attaching an ever greater priority to limiting climate warming since 2019.

Presumably, differing assessments of the solutions agreed in Germany for dealing with climate change – phasing out nuclear energy and strongly promoting renewable energies – are reflected in this opposing assessment.

Limiting climate warming as a task for the future in Germany





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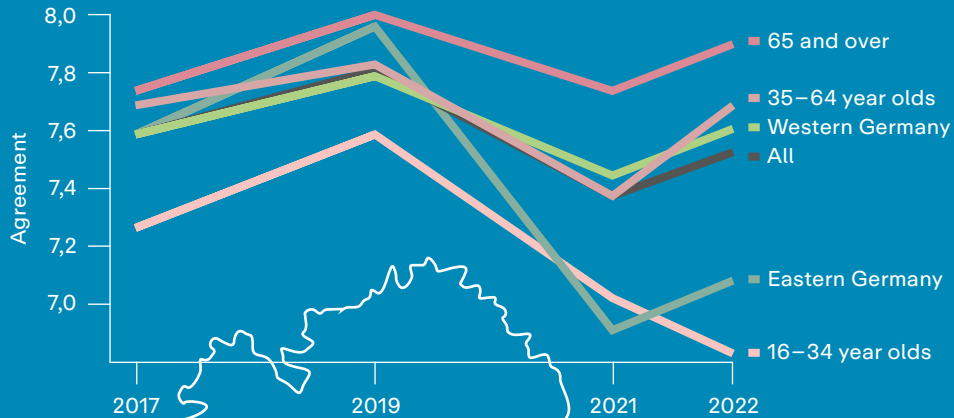
Cutting back on consumption to conserve the environment: Declining willingness among younger people and east Germans

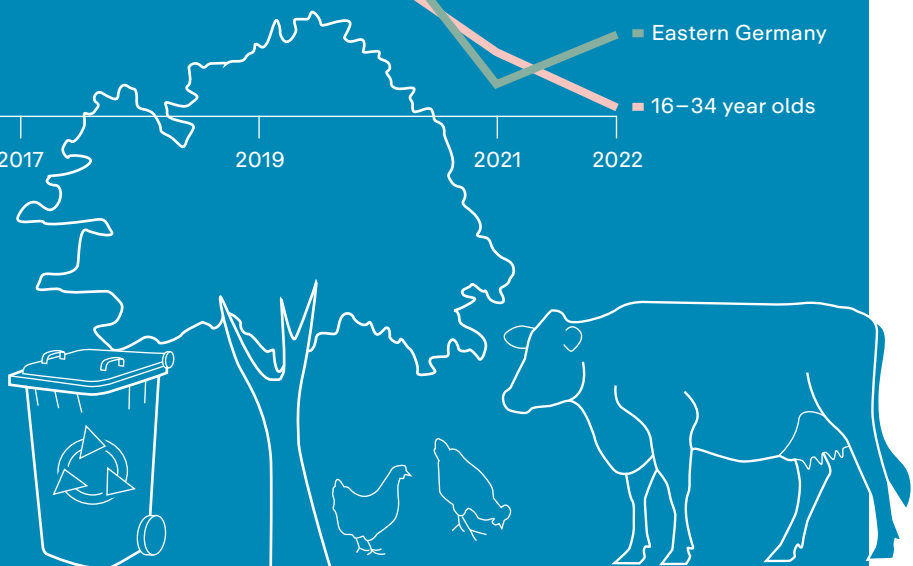
Conserving the environment and not overloading ecosystem capacity are vital to global climate and sustainability strategies. Around three quarters of respondents surveyed between 2017 and 2022 consistently agreed that cutting back on consumption can make an important contribution:

While women and men and the academically and non-academically educated have converged in their assessment over the course of successive surveys, there are growing divergences between the age groups and between east and west Germans. In addition to the sharp drop in approval in eastern Germany, the decline in the youngest age group is also noteworthy. On closer examination, it becomes clear that the 16 to 24 year old group has deviated most significantly from the overall average (6.49 versus 7.52), which means that the gap has more than doubled since 2017.

The fact that younger people have a smaller environmental footprint and east Germans consume less energy could be behind their declining approval. In the light of this social inequality, it is obviously perceived as unfair if everyone is expected to reduce their consumption to the same extent.

“Conserving an intact environment requires us all to limit our consumption.”





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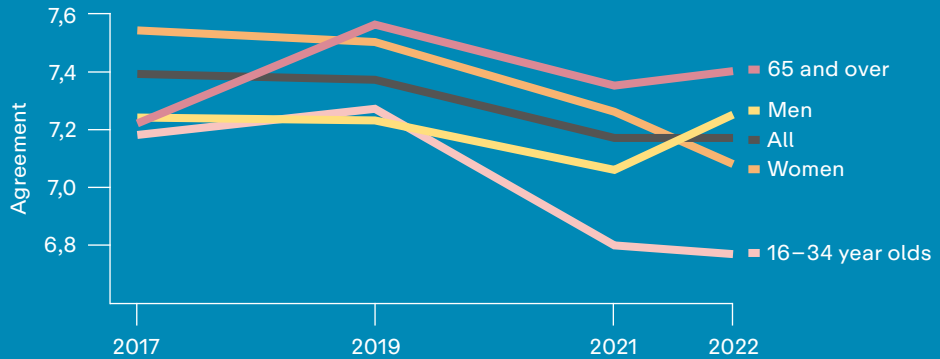
Desire for participation: Distinct generational and gender differences

The coronavirus warning app and vaccination were the subject of intense public debate and information campaigns both during and after their introduction. As a result, the majority of Germans felt sufficiently informed by the government on these issues. While trust in decision makers has been continuously rising since 2019, in 2022 it was still below the level of the first survey in 2017. Being better informed and presumably oriented towards pragmatic solutions, citizens expressed less desire for greater civic participation in science and technology issues, in both Europe and Germany.

The desire for participation is not declining equally across all groups. Among 16 to 34 year olds, it is falling significantly, while among the over-65s it is more on the rise. While there was initially greater demand for participation among women, their desire has steadily declined, as a result of which demand was clearly greater among men in the post-coronavirus pandemic survey (2022).

“Citizens should have a greater say in the future of controversial technologies.”



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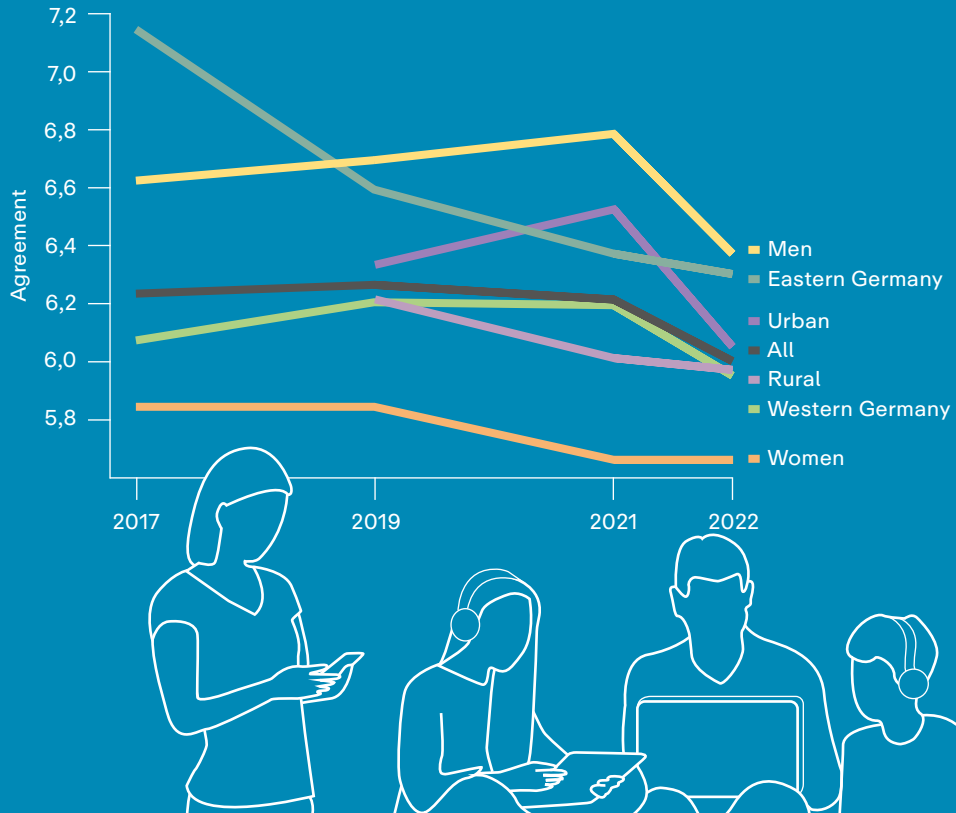
A better future through technology: The promise losing credibility

Germans are increasingly less likely to believe that technological progress will also lead to a higher quality of life for future generations. Agreement with this statement has been falling across all groups over the course of the four surveys in Germany, particularly among men and in the youngest and oldest age groups. Nevertheless, a comparison across Europe reveals Germans to be more optimistic than average about the long-term consequences of technological progress. But here too it is apparent that the proportion of those who are sceptical about developments has steadily increased. This erosion, albeit slow, of one of German society‘s central beliefs is also evident in other areas of community life.

“Technological development will lead to a higher quality of life for future generations.”



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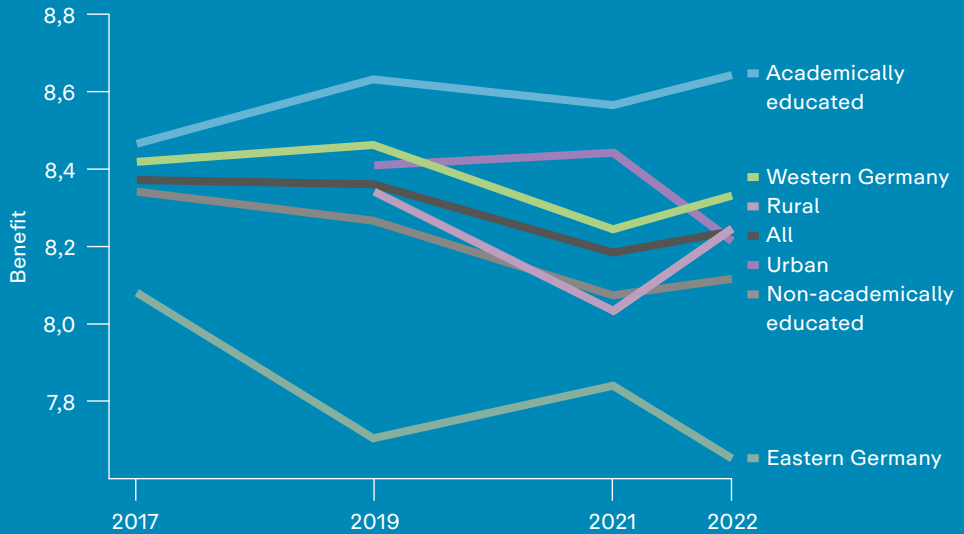
Renewable energies: Prices and security of supply determining benefits

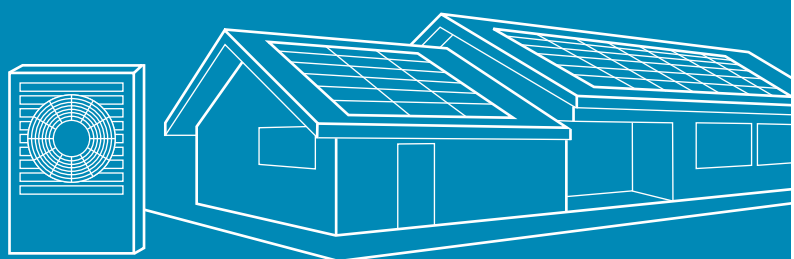
All population groups rate renewable energies as the most useful of the technologies surveyed. Academically educated people, women, people living near major cities and west Germans – and younger people before 2022 – tended to rate the benefits of increased use of renewable energies more highly than the respective comparison group.

Nevertheless, some changes can be observed between the groups: the assessments of urban and rural areas and of men and women have become increasingly similar over time. In contrast, the differences between eastern and western Germany widened again between 2021 and 2022, after the two groups had converged in their assessments between 2017 and 2021.

The personal impact of rising electricity and energy prices in 2022 probably had a strong influence here. The attitude of the over-65s in particular is changing: at the beginning of the sequence of surveys, this group still had the lowest benefit rating. By 2022, this rating had risen significantly to above the level in the other age groups and than in previous years, presumably because renewable energies are perceived as inexpensive and safe.

Increased use of renewable energy sources





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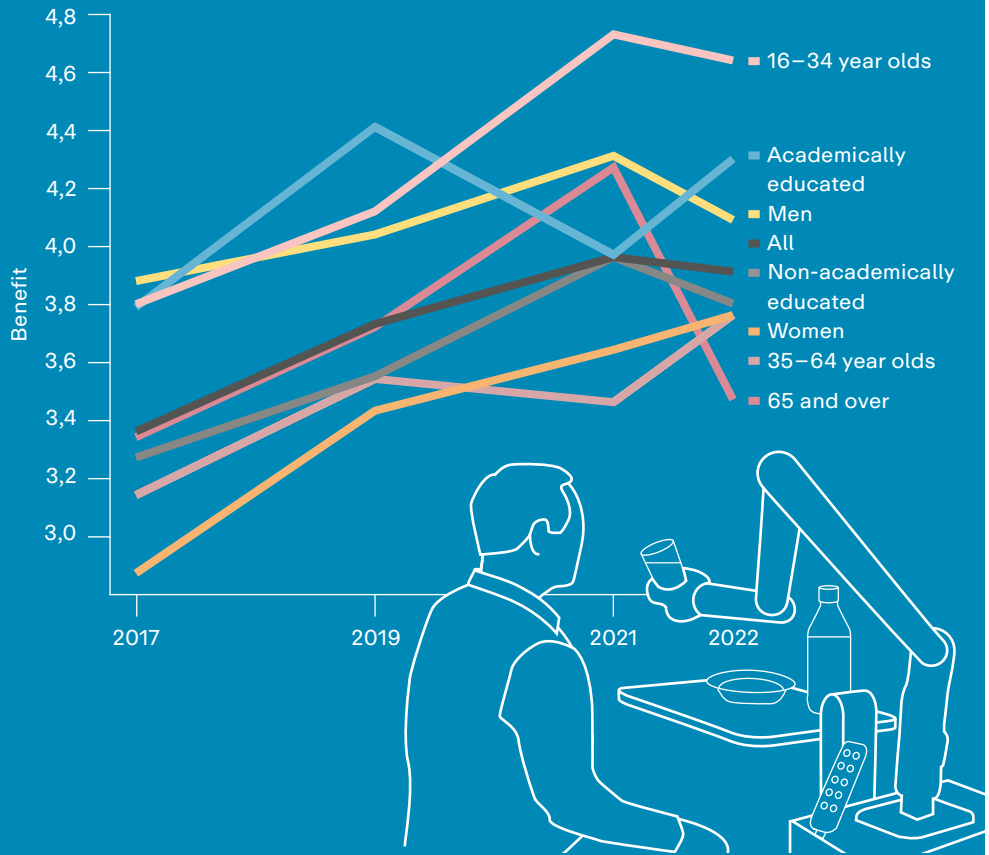
Robots in a care setting: Risk consistently assessed higher than benefits

The use of robots to care for people in need of care was the only technological development that was rated with a higher risk than benefit across all successive TechnikRadar surveys. Moreover, the benefit is rated the lowest and the risk the highest. Only using genetic engineering to secure food supplies is perceived similarly negatively over the course of the surveys. Nevertheless, the benefit is being rated more positively over time while at the same time the risk is being rated lower.

In particular, there are fears of a loss of human attention for those in need of care and a future in which only the wealthy will be able to afford human care. Under certain circumstances, however, a majority also see opportunities, namely that by taking on simple routine tasks, robots might free up capacity, allowing nursing staff to devote more time to the needs of patients. There are nevertheless distinct differences in the assessments by younger and older people. Older people, who are more dependent on care services, presumably fear being dehumanised, while younger people perhaps hope that their work will be made easier and that routine tasks will be taken over.

Increasing use of robots in a care setting



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This booklet summarises the key findings of TechnikRadar 2024 – Trends in attitudes to technology. The full version (in German) and all previous issues of TechnikRadar can be obtained from:

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