

# Snapshot of the 2022 South African Public Relationship with Science Survey

Science helps us understand the world, ourselves, and the challenges we face. Beyond its economic and technological benefits, science plays a vital role in addressing global and local issues that impact our lives.

Since 1994, South Africa has recognised the importance of involving all citizens in shaping the National System of Innovation (NSI). The Department of Science, Technology and Innovation (DSTI) leads efforts to promote public engagement with science and build a science-literate society. Key policies like the White Paper on Science, Technology, and Innovation (2019) and the Science Engagement Strategy (2015) guide these efforts. To track progress, indicators were developed to measure science engagement and the South African Public Relationship with Science Survey was developed to assess public knowledge, attitudes, and engagement in relation to science and technology.

In 2022, the first national survey provided a basis for developing informed strategies to enhance the connection between science and society. The survey will be conducted every five years, with the next one planned for 2027. Two reports have been produced on the 2022 results and can be referred to for more information:

- Department of Science and Innovation (2024) *The South African Public Relationship with Science 2022 Survey Results*. Prepared by the Human Sciences Research Council for the Department of Science and Innovation. Pretoria.
- Department of Science and Innovation (2024) *Highlights of the South African Public Relationship with Science 2022 Survey Results*. Prepared by the Human Sciences Research Council for the Department of Science and Innovation. Pretoria.

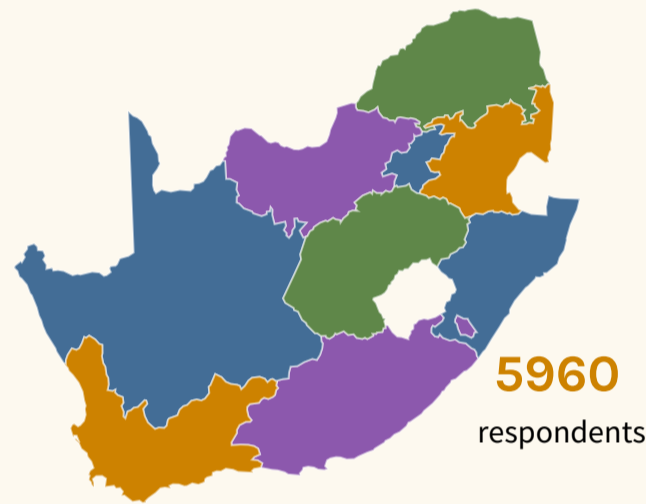
## Study methodology

### Sample population

- Representative sample of the national population
- Adults, 16 years and older
- Selected from 500 areas across the nine provinces

### Survey approach

- Conducted by the Human Sciences Research Council (HSRC) through the annual South African Social Attitudes Survey (SASAS)



### Survey instrument

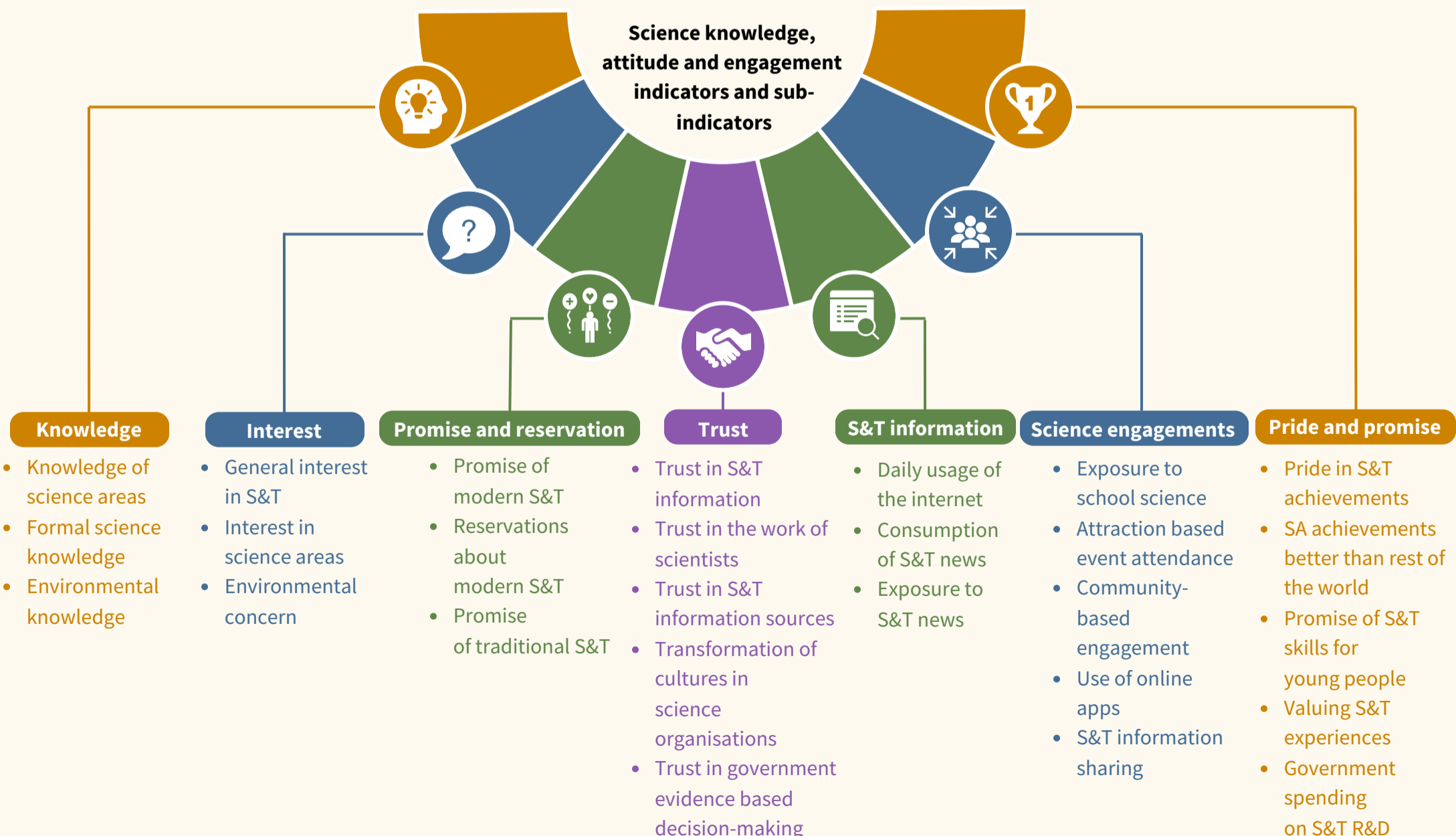
- 200 items about the public relationship with science
- 28 demographic and contextual items

### Survey interviews

- November 2022 - January 2023
- One-hour face-to-face interviews
- Conducted in one of the 11 official languages, based on respondents' preference

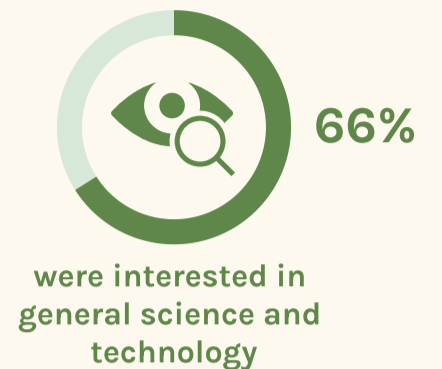
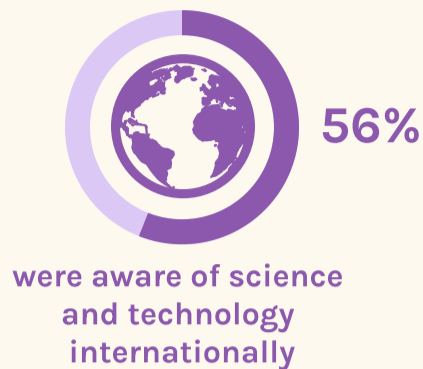
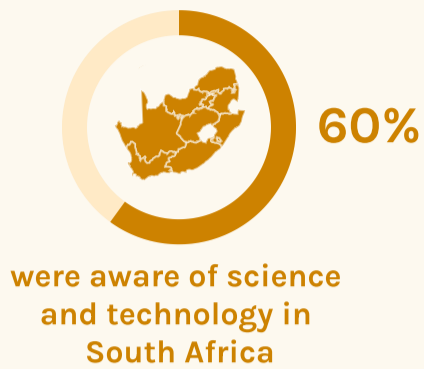
## The Science Engagement Monitoring and Evaluation Impact Indicator Framework

The SEMEIF was slightly adjusted to encompass seven indicators or impact themes and 27 sub-indicators or impact measures. These indicators included science and technology (S&T) knowledge and interest, attitudes of promise and reservation, trust, S&T information, and science engagement outcomes, including sentiments of pride and the perceived promise of S&T. To define and implement each indicator or impact theme, three to five impact measures were identified.



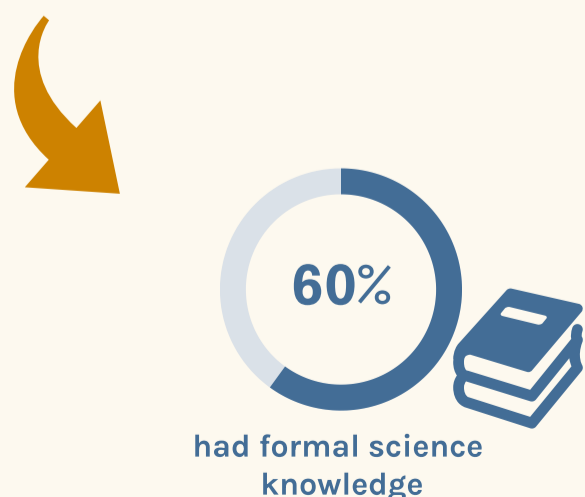
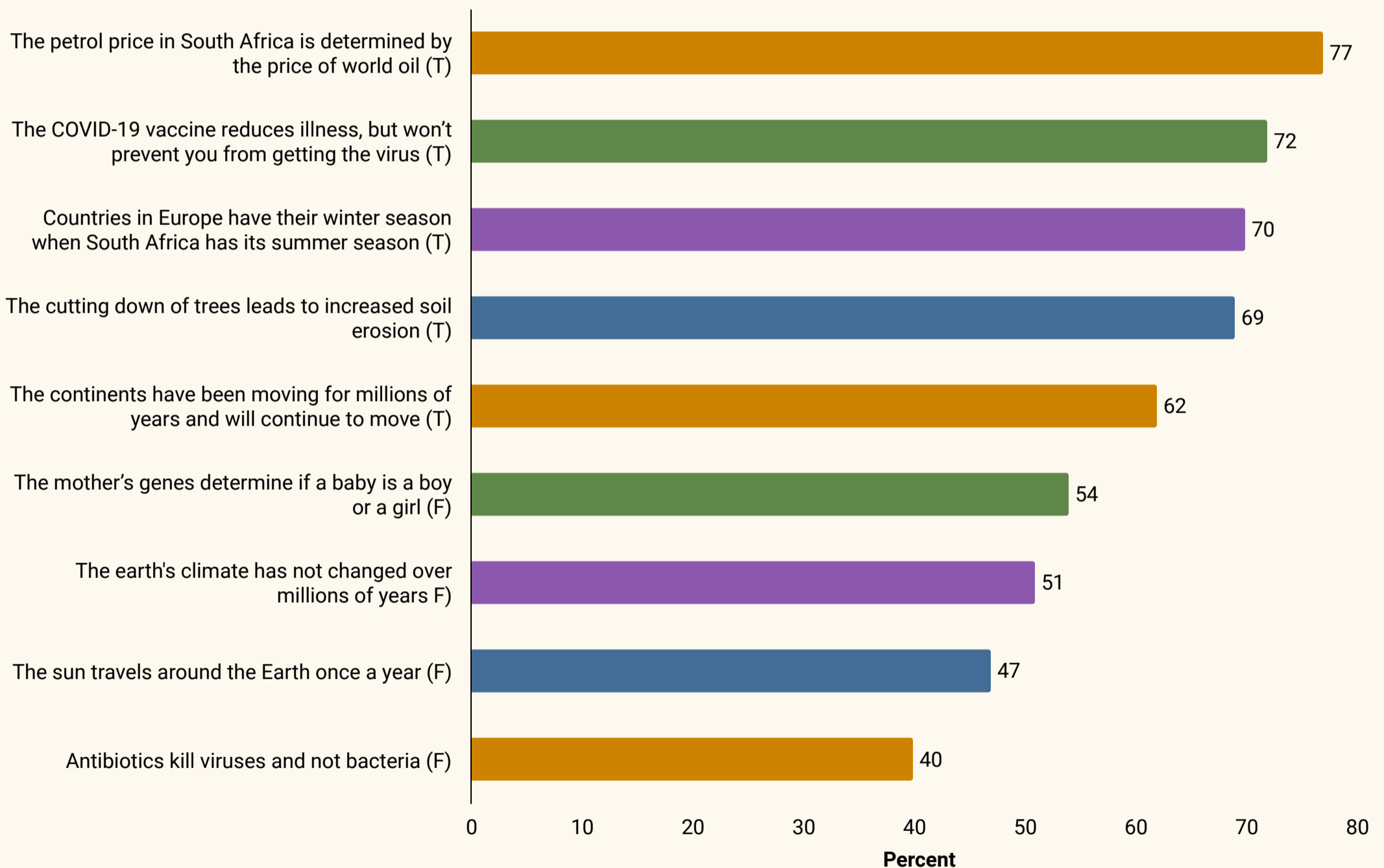
# Knowledge of, and Interest in, Science and Technology, and the Environment

Studies from around the world show that people's knowledge of, and interest in, science and technology (S&T) reveal important aspects of how the public relates to science and further influence the extent of science engagement. The 2022 South African Public Relationship with Science (SAPRS) Survey investigated South Africans' knowledge of, and interest in, science and technology, and the environment.



## Formal science knowledge

The SAPRS Survey featured several items aimed at measuring the public's science knowledge. To assess understanding of scientific facts and concepts, participants completed a nine-question science knowledge quiz. For each statement, respondents indicated whether they thought it was "True" (T), "False" (F), or if they were uncertain. The statements addressed core scientific concepts critical for participating in contemporary public discussions. The graph shows the percentage that gave the correct answer for each statement.



The True/False statements with the lowest percentage of correct responses were the more cognitively challenging ones, such as "Antibiotics kill viruses, not bacteria".

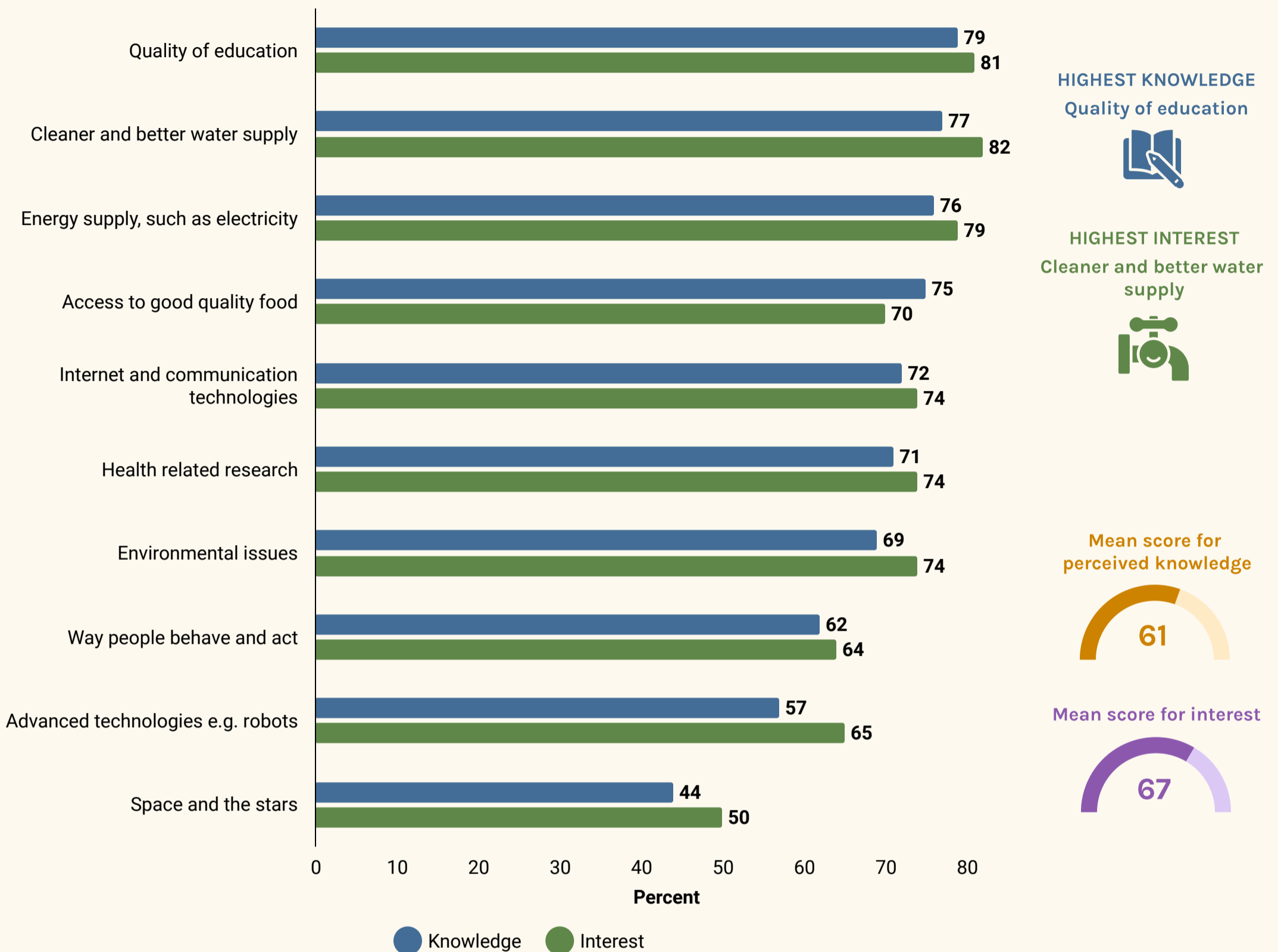
In contrast, the statements with the highest accuracy were those that had been prominent in the news prior to the survey, such as those about the COVID-19 vaccine and rising petrol prices.

The relatively high proportion of correct responses to these items highlights the public's engagement with information directly relevant to their daily lives.

# Knowledge of, and Interest in, Science and Technology, and the Environment

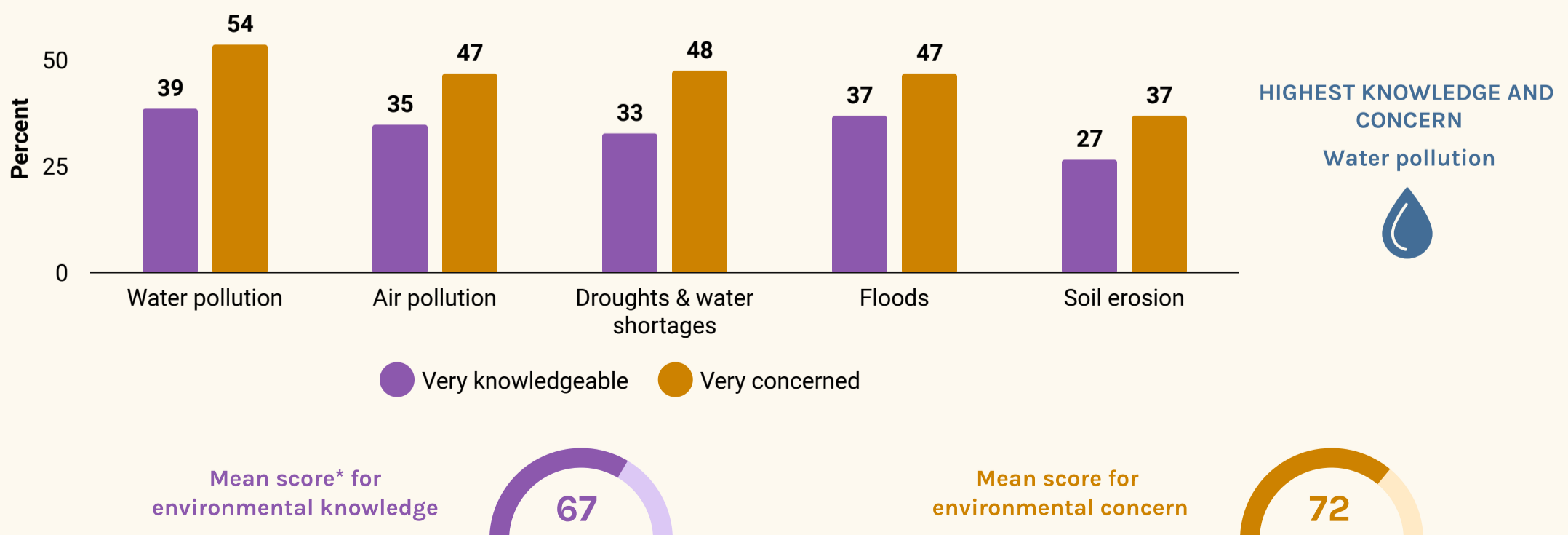
## Knowledge about and interest in, priority science areas

Knowledge refers to the information one possesses, while awareness indicates being informed, though not necessarily having a complete understanding. By interest, we mean wanting to know more about something.



## Knowledge and concern about environmental events

The effects of climate change and environmental events are a global concern. Given the national and global importance of environmental challenges, the survey included items that focused on the public's knowledge and concern about current natural and environmental events facing South Africa.

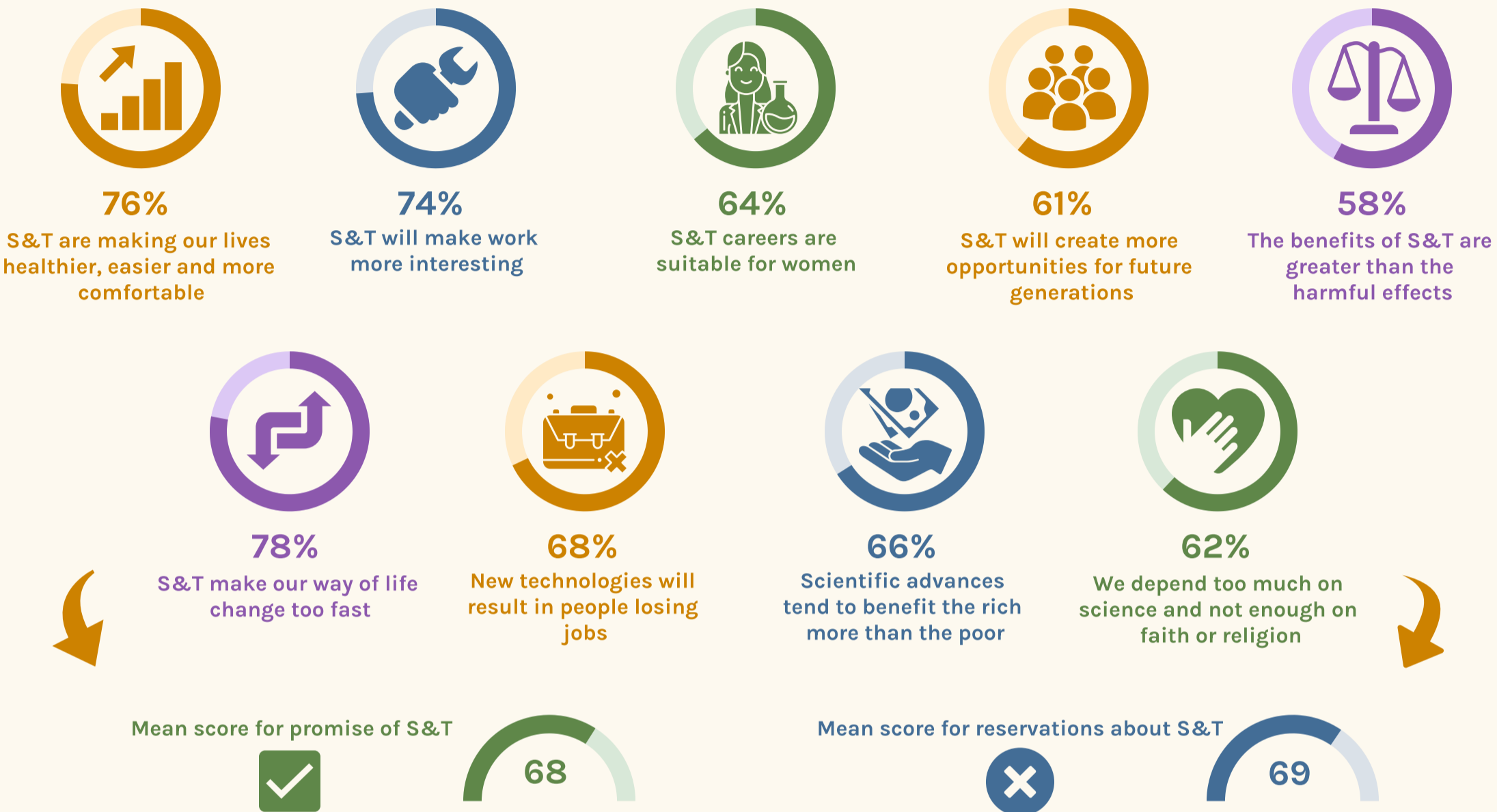


# Promise and Reservation Attitudes towards Modern and Traditional S&T

In the interview, the public responded to sets of items which asked about their attitudes of promise (potential benefits) and reservation (concerns, fears and risks) related to modern and traditional science. The South African public acknowledged both the promises of, as well as concerns about, S&T.

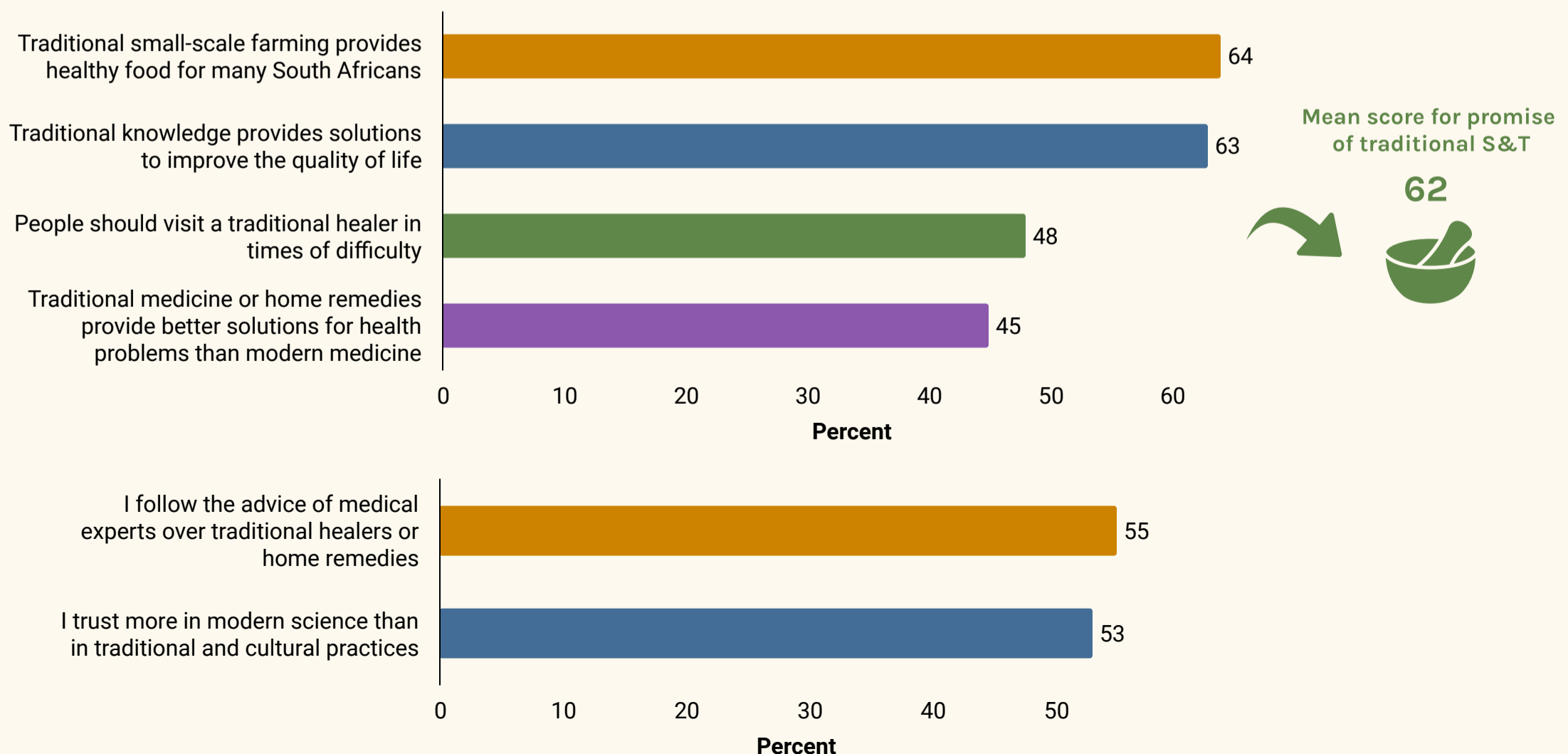
## Promise and reservations related to modern science

A set of promise and reservation items were included, some of which were adapted from international surveys and others that were newly developed. This set included five items designed to measure attitudes about the promise of modern science and four items focused on measuring reservations about modern science.



## Promise and reservation attitudes towards traditional science

There is growing acknowledgement that modern science is not the only knowledge form, and that community and traditional knowledge should also be valued and promoted. By *traditional knowledge*, we mean the knowledge and skills that have been passed on from generation to generation within a community.

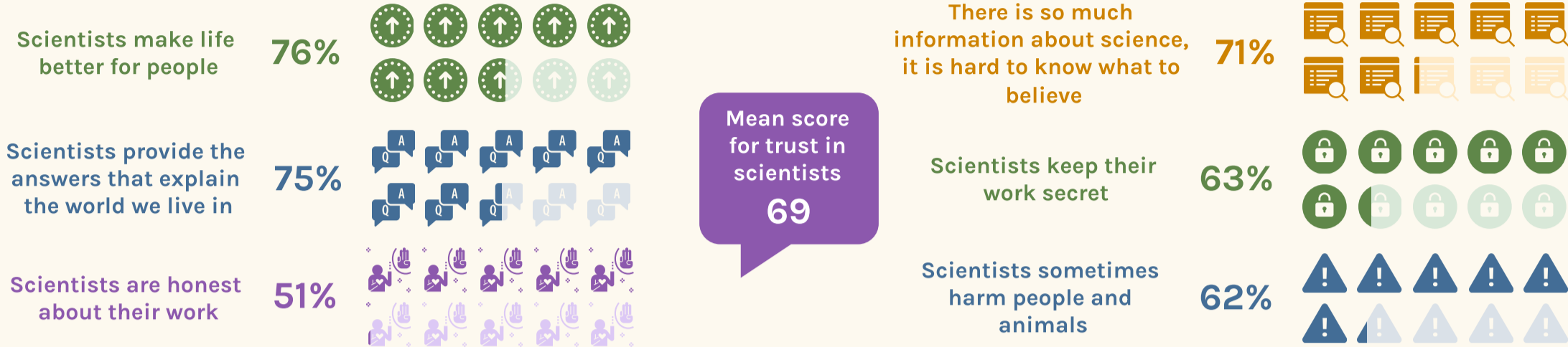


# Trust in Science, Scientists and Science Institutions

Science and scientists provide evidence-based information and advice about how to solve societal problems. For the advice to be accepted, the public needs to trust science and scientists, as well as have confidence in institutions that produce such knowledge.

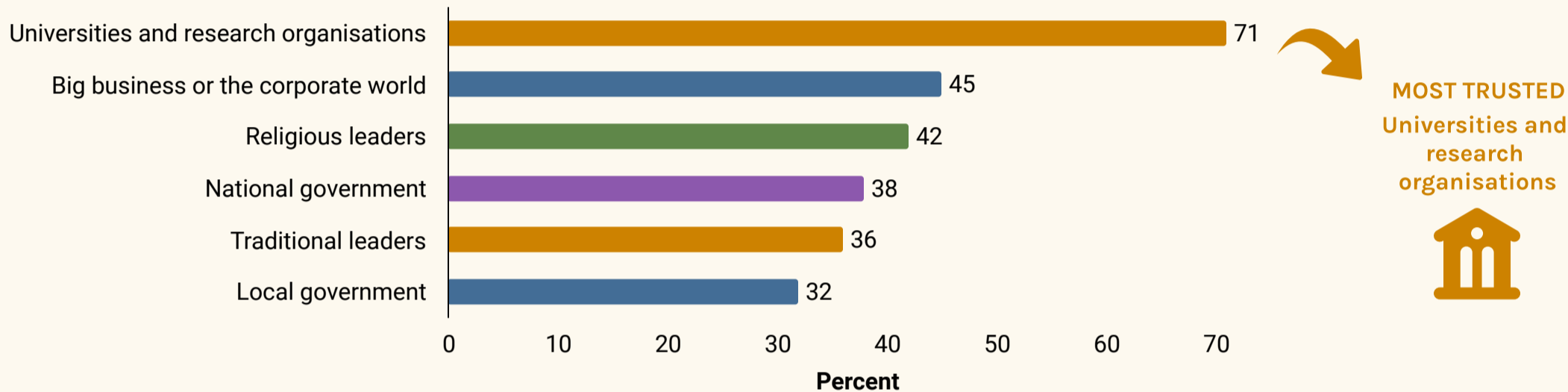
## Promise and reservations about scientists and their work

Trust in science and scientists is likely to be associated with greater acceptance of scientific information.



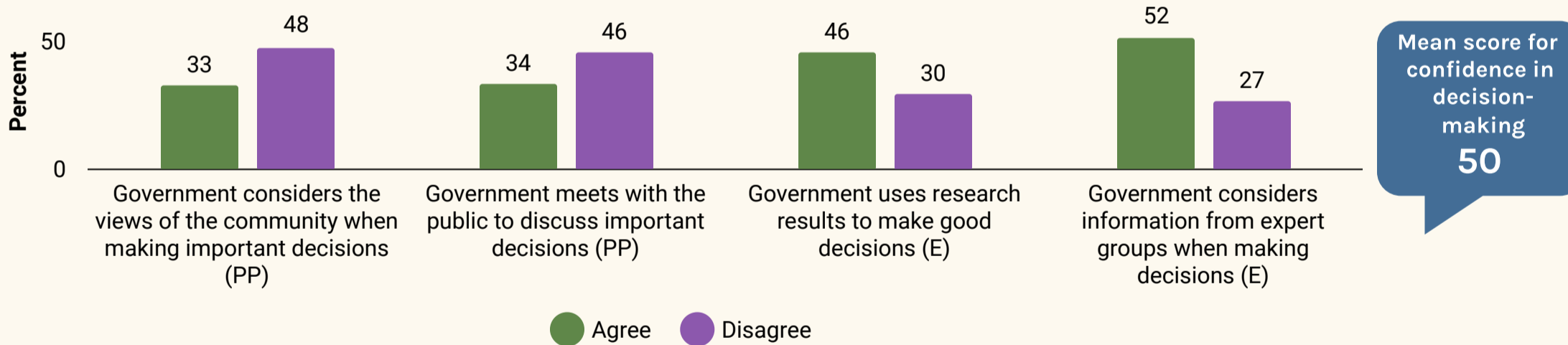
## Confidence in S&T information from different institutions

One way to understand confidence in institutions is to rate the trust placed in the S&T information that emerges from those institutions.



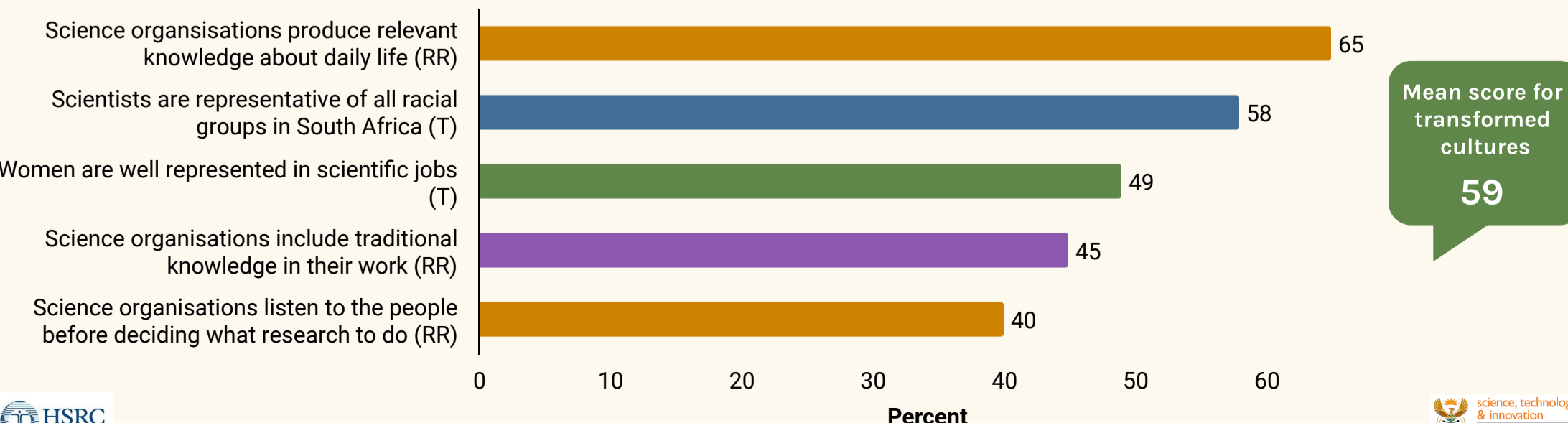
## Confidence in government's evidence-based and participatory decision-making processes

Two items were used to measure public trust in evidence-based decision-making (E); and another two items were used to assess attitudes towards government's incorporation of public participation (PP).



## Transformation of cultures within science organisations

Science institutions, like other organisations in the country, are required to: (i) make their work more relevant and responsive to the needs of the public (RR); and (ii) have workforces that are transformed and more representative of the demographics of the country (T).

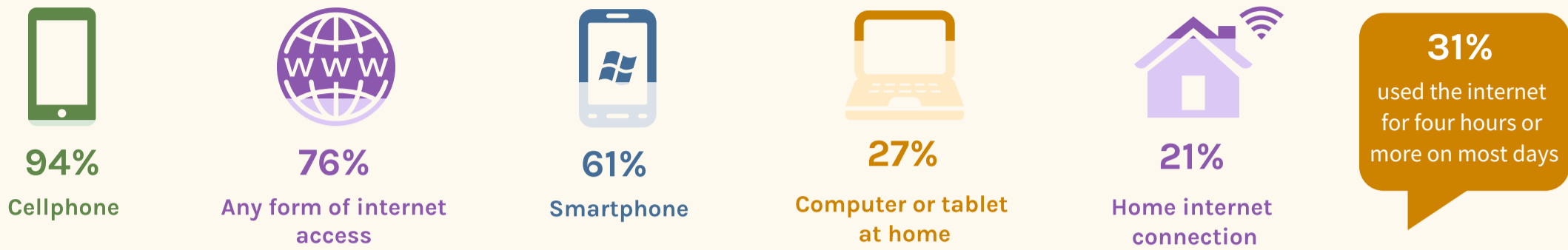


# S&T Information: Access, Exposure, Consumption and Trust

A good relationship between science and society requires the communication of S&T information and ensuring that the public can access and trust this information.

## Access to digital devices and the internet

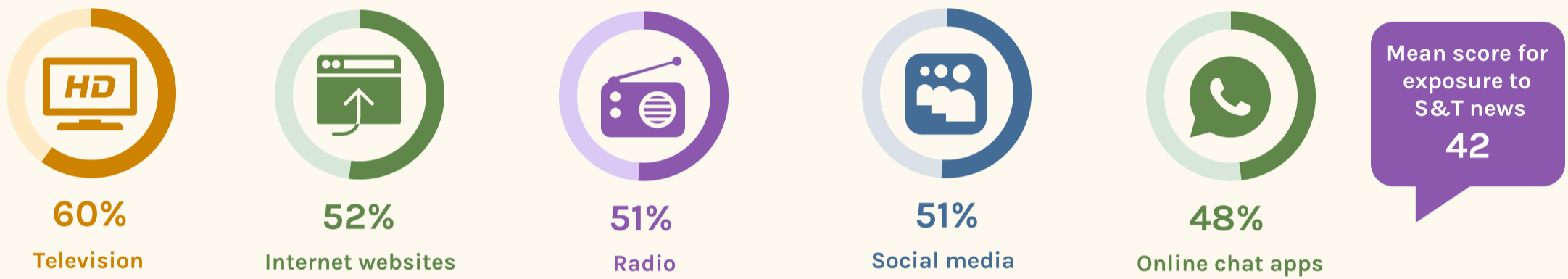
The digital space is now the most popular source for access to, and the communication of, information. A description of the levels of access to this space, especially in low-income, unequal societies, provides a picture of one of the prerequisites for access to S&T information.



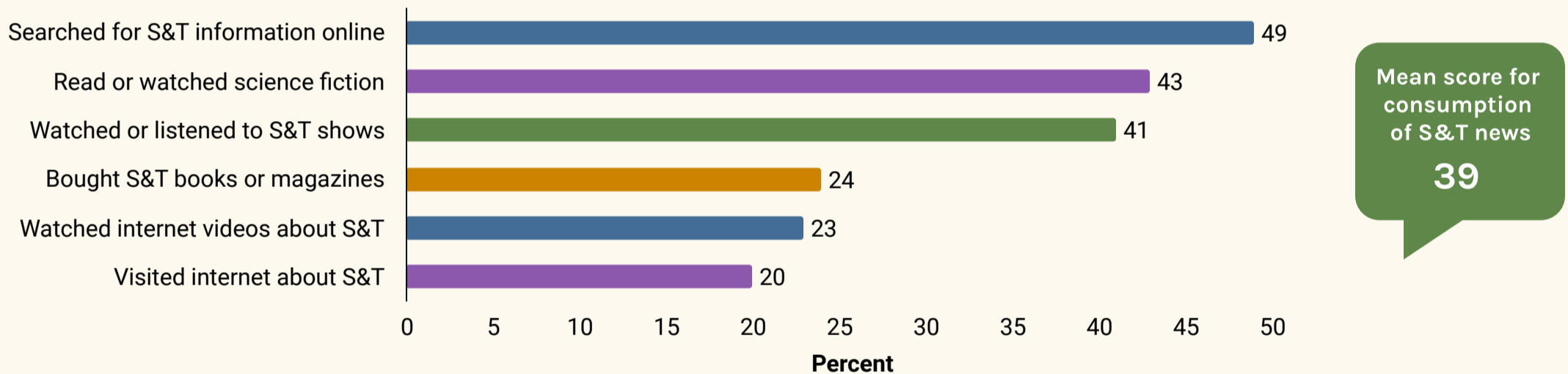
## Exposure to, and consumption of, S&T information

We refer to the amount of S&T information that the public received as exposure, and the active accessing of S&T information as consumption.

### Most popular sources of S&T news (% at least weekly)



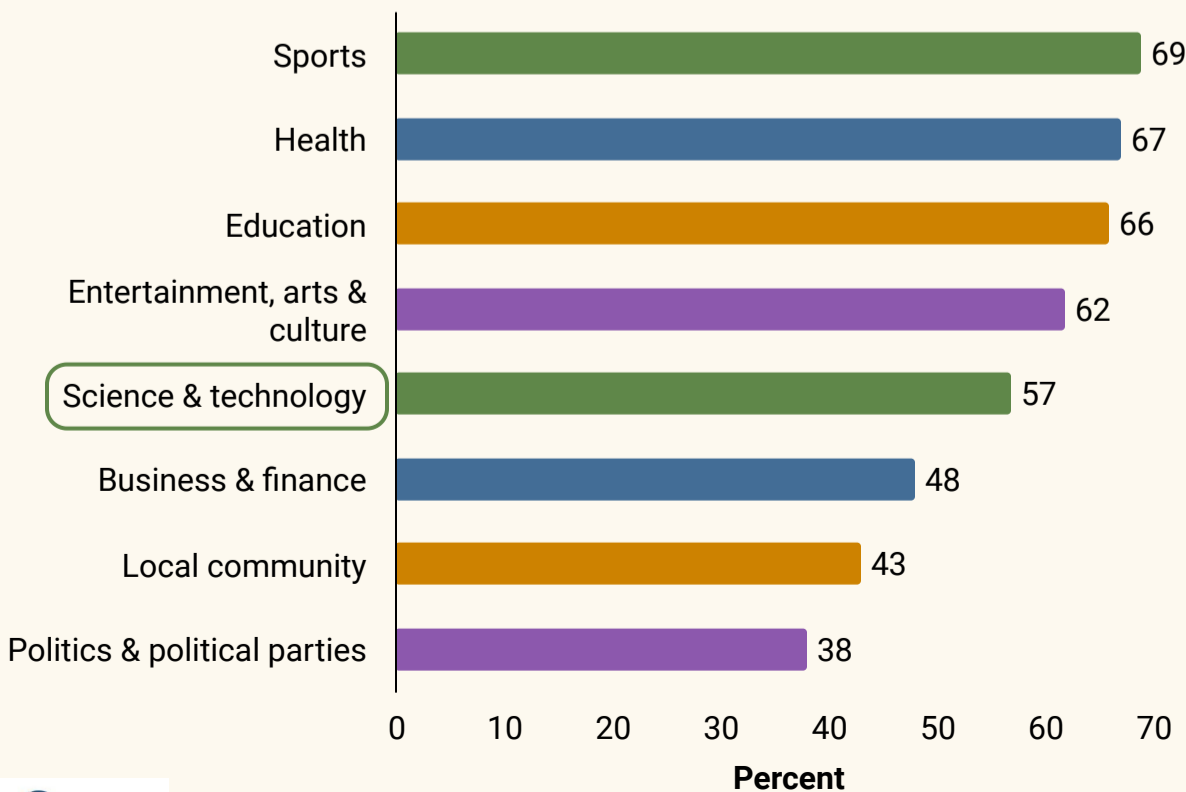
### Most popular ways S&T information was consumed (% at least sometimes)



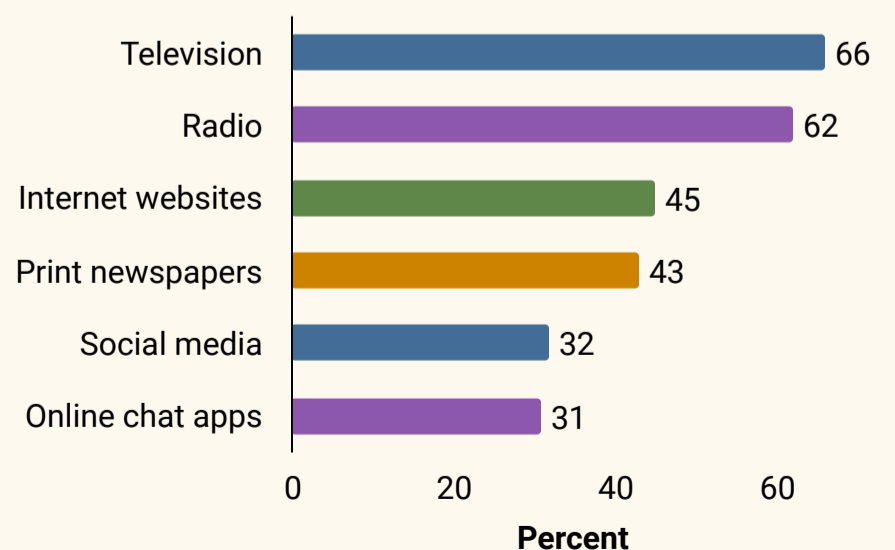
## Trust in news content and S&T news sources

The analyses explored levels of trust in specific news content areas, including S&T; as well as trust in different news sources for S&T information.

### Trust in news content



### Trust in S&T information sources



**MOST TRUSTED**  
Television and radio



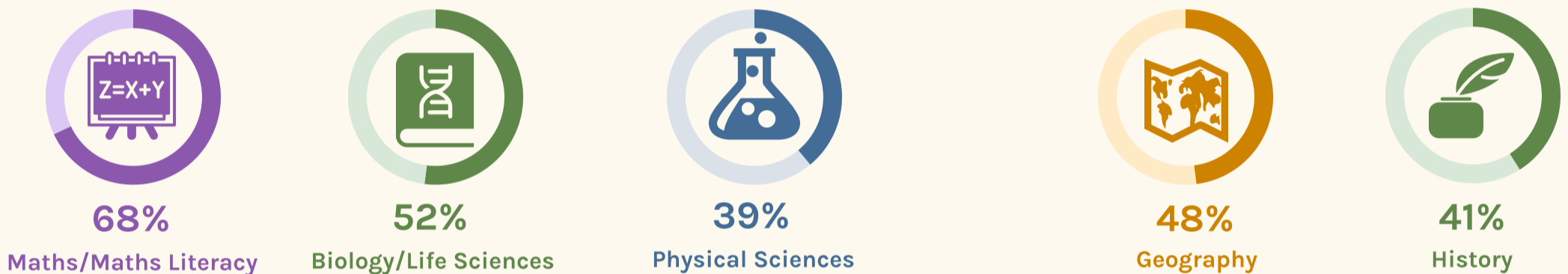
# Science Engagement Outcomes: Activities and Behaviours

Survey respondents were asked whether they had participated in various S&T-related activities or events, as this serves as an expression of their science engagement behaviours. The activities or events were categorised into five broad types of engagements.



## Academic engagement: Level of exposure to STEM and Social Science subjects after Grade 9

A measure of academic engagement with S&T is the level of formal Science, Technology, Engineering and Mathematics (STEM) and Social Science (SS) education received in senior secondary school. We therefore looked at the percentage of the public that continued with STEM and SS subjects after Grade 9.

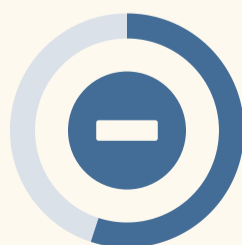
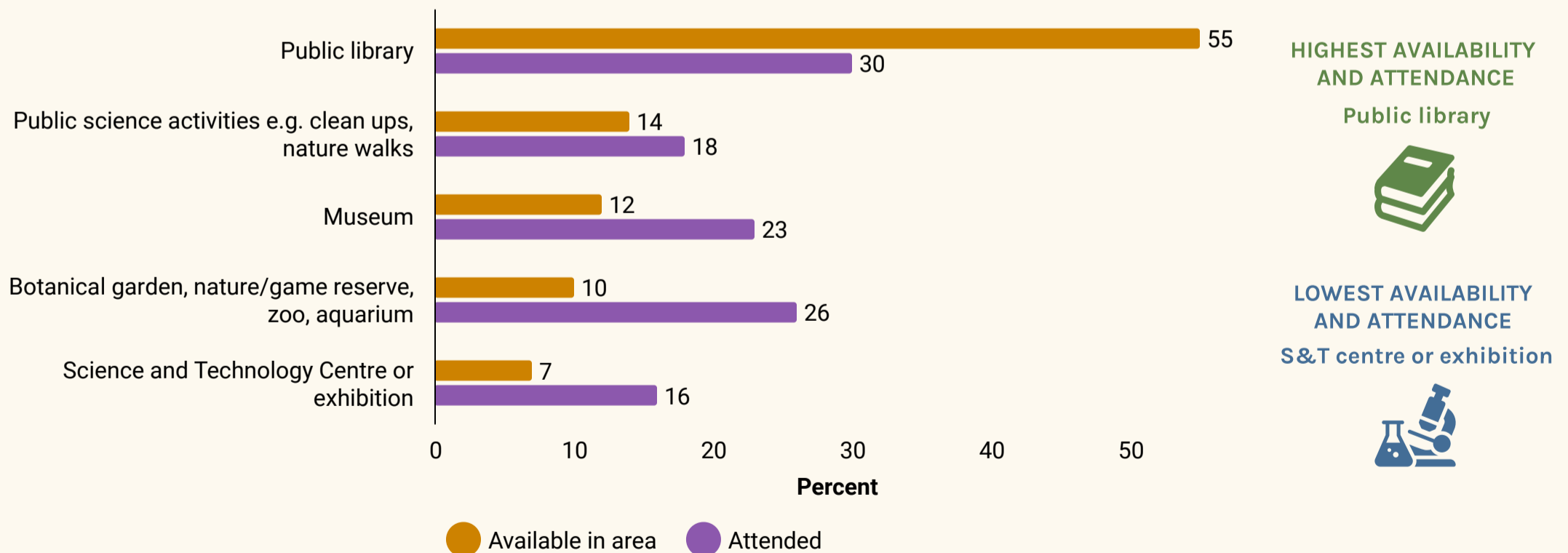


**31%** took all 3 STEM subjects after Grade 9

**32%** took Geography and History after Grade 9

## Attraction-based engagements: Availability of, and attendance at, S&T sites and activities

Science events and activities, occurring in fixed spaces or through outreach programmes, are one way to establish a link between science and society. Events or attraction-based engagements are dependent on these activities being conducted close to where one resides. Survey respondents were therefore whether certain sites or activities were available close to their residence (at the time of the survey), and whether they had attended any of these S&T sites or activities.



reported not having attended any S&T sites or activities

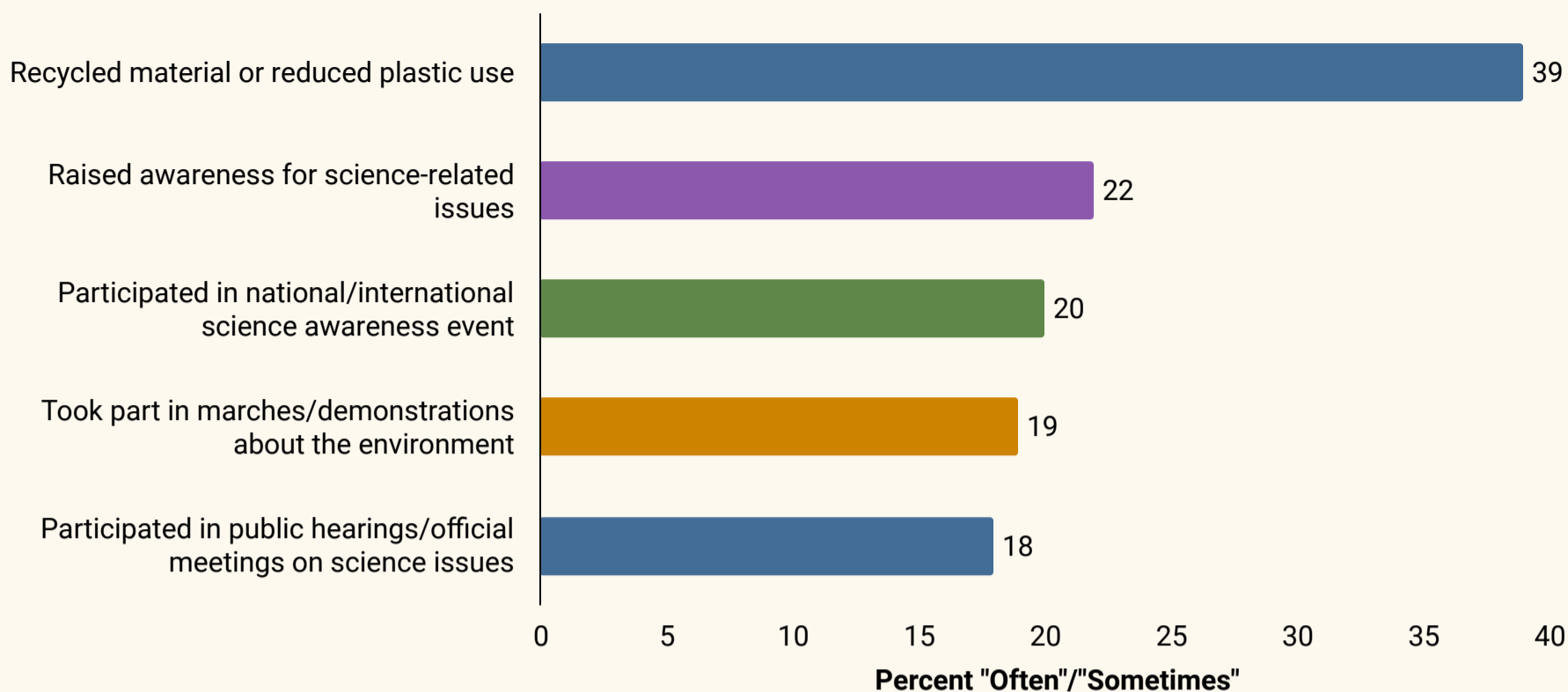


of the public were "somewhat" or "very" interested in attending S&T sites and activities

# Science Engagement Outcomes: Activities and Behaviours

## Community-based engagement: Participation in community science activities

The public reported on their participation in science-related activities and events for the improvement of communities. Overall, there was low participation in community-based activities, with only one in every 10 adults participating frequently.

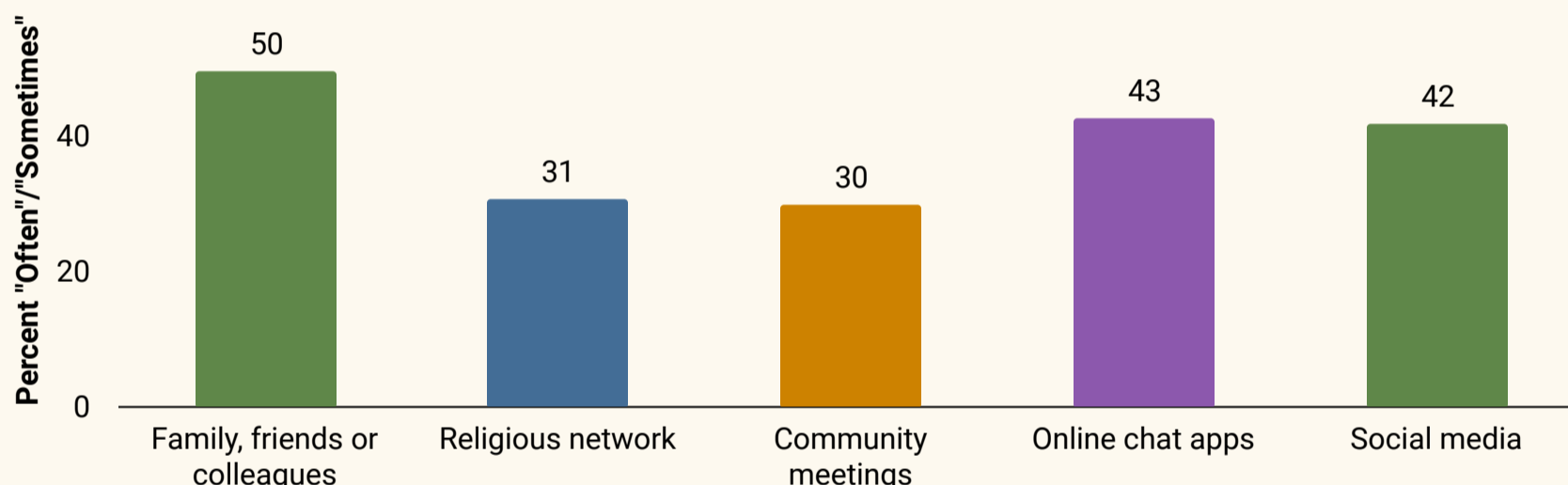


**HIGHEST PARTICIPATION**  
Recycling/reducing plastic use



## Information-sharing engagement

In addition to receiving S&T information, the public also reported how they shared S&T information. The sharing of information through social networks is a mechanism to communicate and disseminate S&T information.



Mean score for information sharing  
**37**

## Personal engagements: Experiences with online apps

In the survey, we also asked a set of questions on the usage of selected online apps. There was generally low usage of online apps reported. The percentages below are for those who "Often" or "Sometimes" used these apps.



**58%**

Internet banking



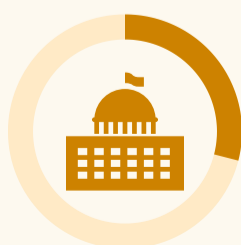
**34%**

Online shopping



**34%**

Ride sharing applications



**29%**

Online government services



**28%**

Health technologies



**22%**

Online learning courses

Mean score for use of online apps  
**32**



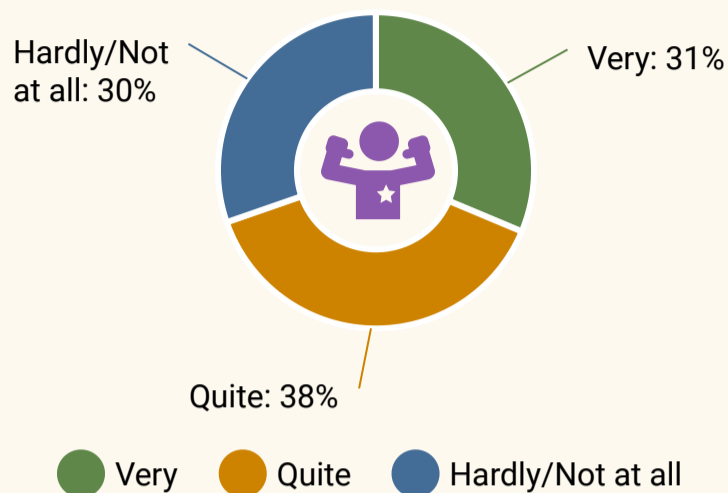
# Views of Pride, Promise and Priorities about the National System of Innovation

A science aware society is underpinned by values which embrace and support science and technology. To obtain measures of how South Africans value and support S&T as well as the National System of Innovation, we surveyed their pride in South African S&T, their perceptions of its promise and priorities.

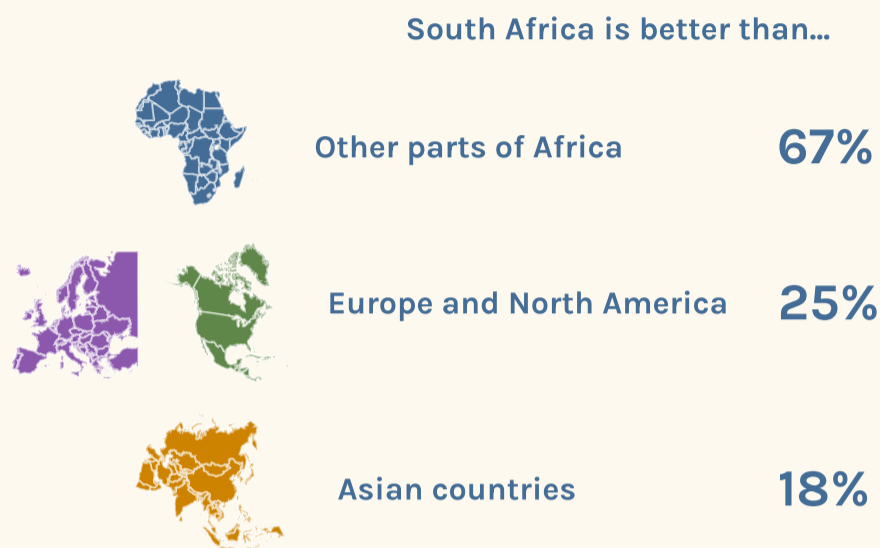
## Pride in South Africa's S&T achievements

Pride denotes a feeling of admiration the public has towards achievements in their country. This feeling of national pride towards S&T achievements can promote more positive S&T attitudes and behaviours.

### Pride in South African S&T achievements



### S&T achievements in comparison with other world regions



## Promise of S&T skills for young people

Two-thirds of the South African population are under the age of 35 years and are encouraged to acquire S&T skills to respond to personal, social and economic challenges. The public rated the promise of S&T skills for young people highly.



86%

Young people should be encouraged to learn about S&T



85%

Digital and computer skills are becoming more important for young people



76%

S&T prepare young people to respond to challenges in local communities

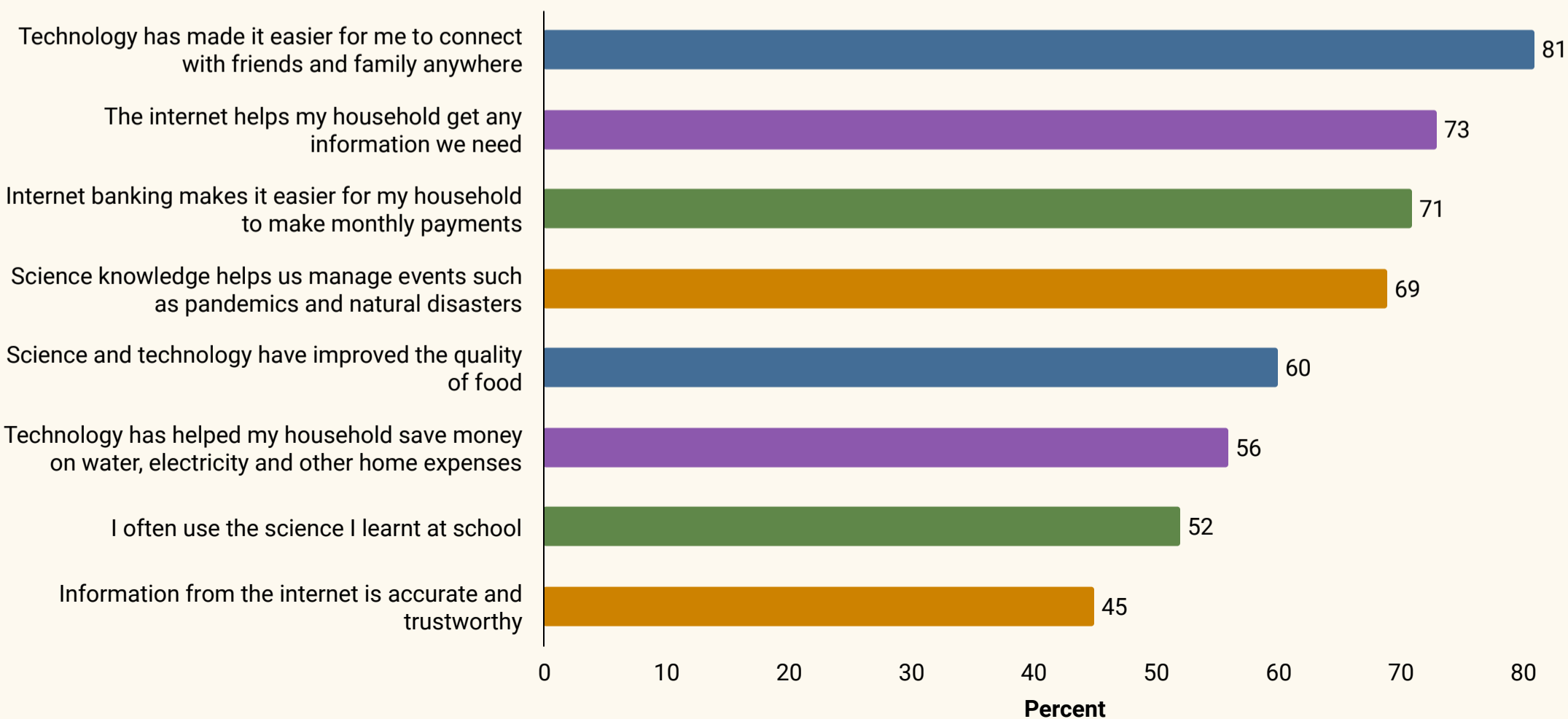


76%

An S&T qualification gives young people more job options than other qualifications

## Value of S&T experiences in daily life

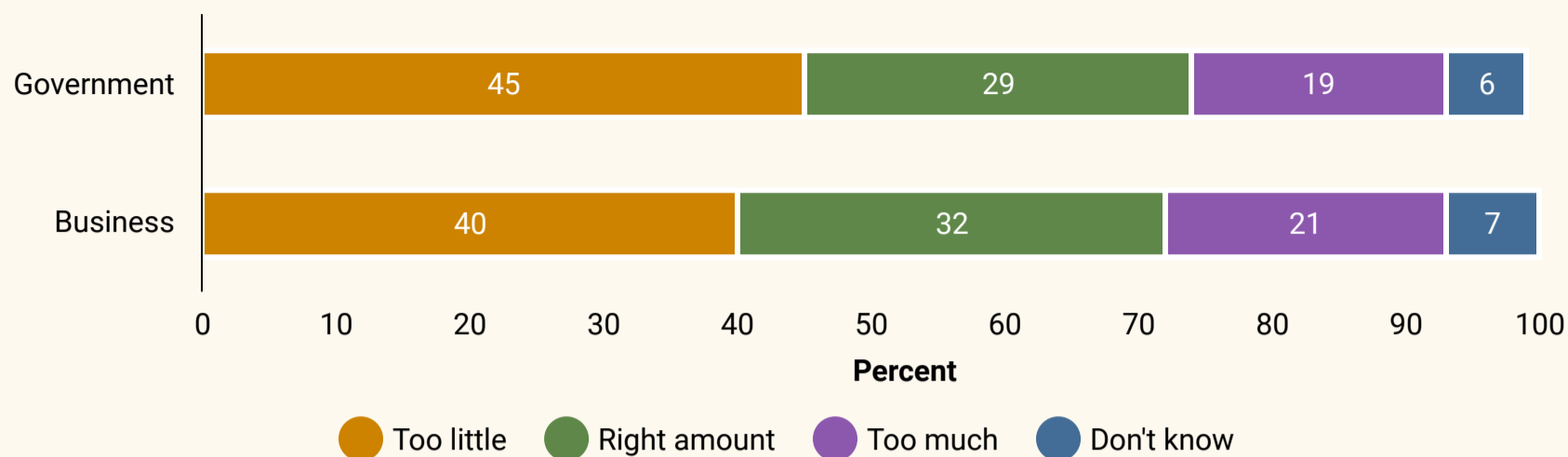
One values something if it is seen as important and worthy of appreciation. Although values are not a science engagement activity or behaviour, they play a role in shaping people's behaviour. The public were therefore asked to rate the value of S&T in various aspects of their home, social and civic life.



# Views of Pride, Promise and Priorities about the National System of Innovation

## Public support for government and business research and development spending on S&T

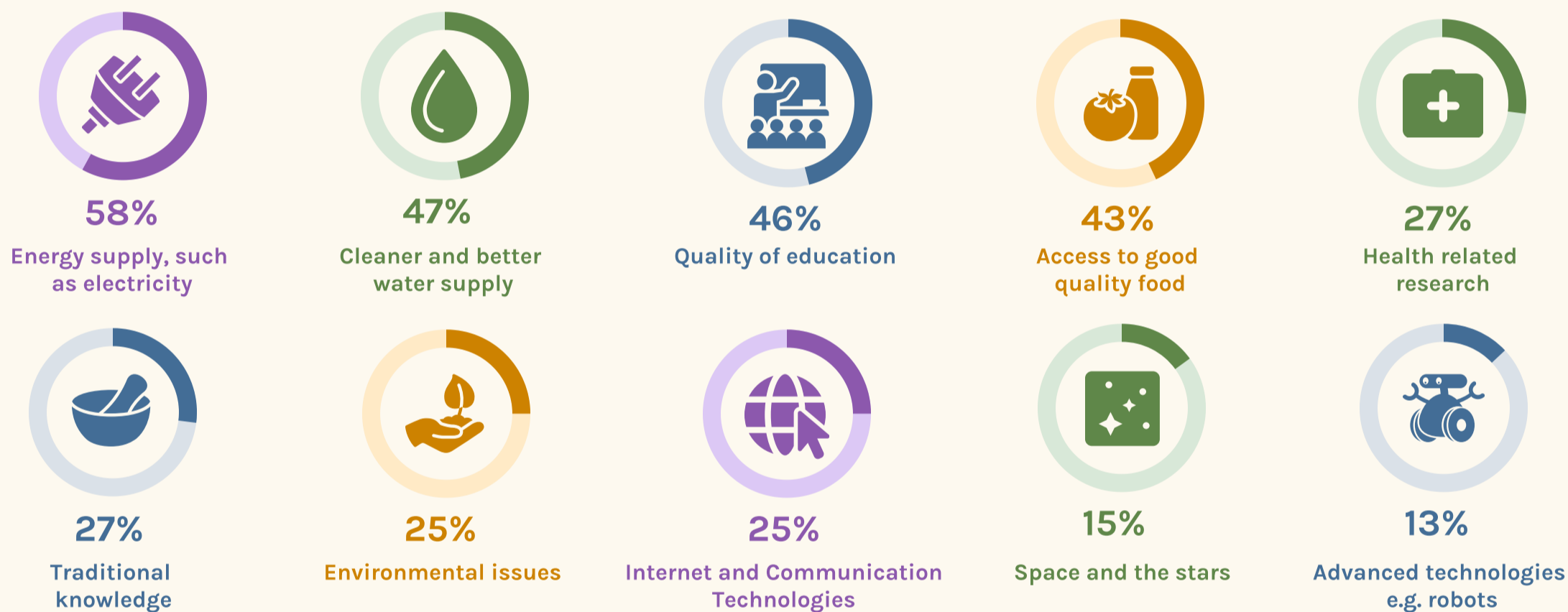
Investments in research and development (R&D) can contribute to addressing developmental challenges, such as providing safe drinking water, good quality food and medicine. The public rated the South African government and big business (i.e. the private sector) in relation to the amount they spend on R&D in S&T.



**40%**  
or more felt that the government and business were not spending enough on S&T related R&D

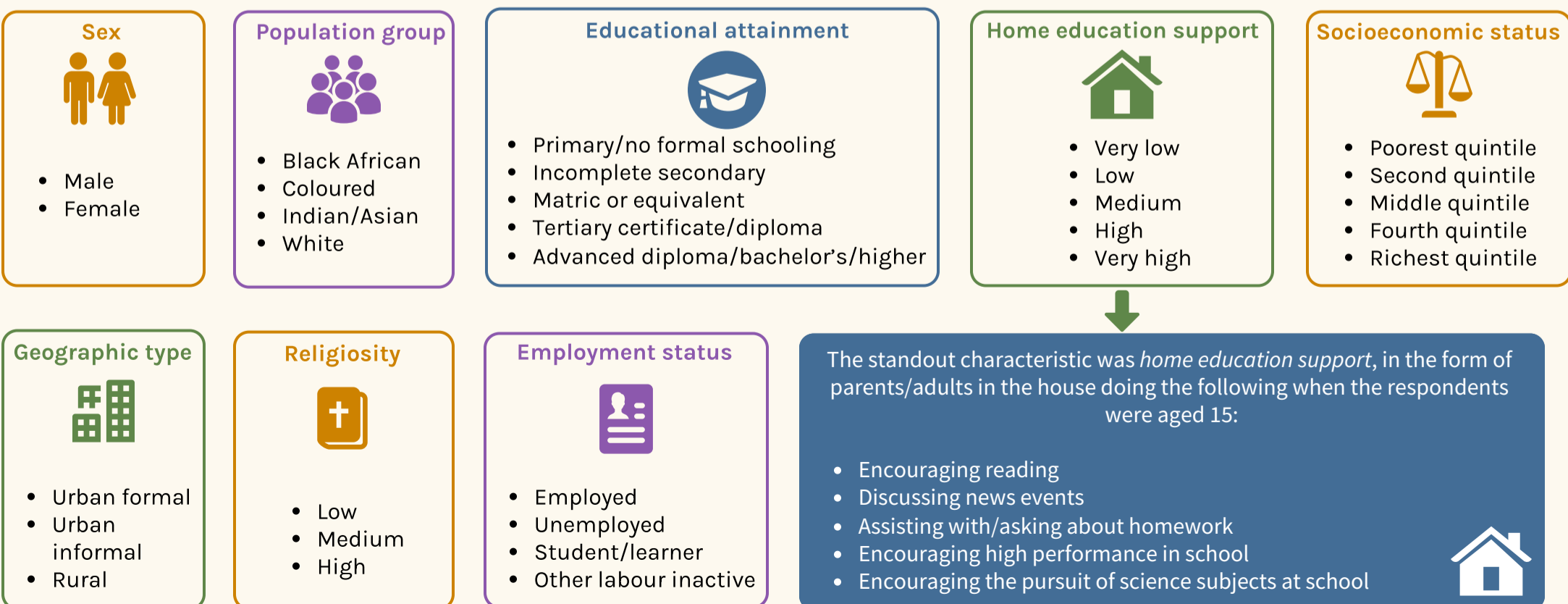
## Priorities for future research funding

After rating their interest in, and knowledge of, a set of contemporary S&T research priorities, the public was asked to select four priority areas that government should continue to fund.



## The role of socio-demographic characteristics in shaping S&T knowledge, attitudes and engagements

Several socio-demographic characteristics were explored to determine their correlation with the different indicators and sub-indicators. The analysis revealed various patterns between these characteristics, and the public's S&T knowledge, attitudes and engagement behaviour.



# Recommendations for Enhancing the Public Relationship with Science in South Africa



## 1. Science engagement must embrace the science and society paradigm

The present study, as well as the approach to the programme of science engagement by the Department of Science and Innovation, is located within a science-in-society paradigm. This paradigm recognises the bi-directional and dialogical nature of the relationship between science and the society. This approach should be continued and strengthened.



## 2. Characterising and describing the South African public

Overall, the results paint the picture of a society with views that are thoughtful, considered, balanced and reflect an awareness of S&T developments. For close to half the measures (promise, pride and trust), the public displayed similar views, irrespective of their socio-demographic backgrounds. For the other measures, there were variations among the public that were largely due to differences in educational attainment, socioeconomic status and access to resources, as well as population group identity and, in some cases, age and geographical location.



## 3. Improving science knowledge

Education, in the form of attainment and home support, was associated with positive science attitudes, participation in science engagement activities, confidence in the South African S&T system, as well as access to, exposure to and consumption of S&T news. In addition to general educational attainment, those with higher science knowledge were more likely to have positive attitudes, access to S&T information and more positive science engagement behaviours and views. Public science awareness programmes should be delivered through multiple traditional and social media platforms, embedding the science that is part of individuals' lived experience within the public discourse.



## 4. Increase interest in S&T and build a society that promotes a science culture

Interest in science was associated with science awareness and knowledge, as well as positive science attitudes and engagements. The scale and reach of present programmes should be expanded, and new programmes with relevant and engaging content should be initiated and communicated through different channels. One of the aims of these programmes should be to instil a culture of curiosity and inquiry in society.



## 5. Knowledge of, interest in, and concern about, S&T are strongly interlinked

To raise any one of them will undoubtedly raise the others, irrespective of the individual and demographic characteristics accounted for. However, a focus on interest may be more amenable for interventions. This has the potential to create a virtuous cycle and the knock-on benefits and spillovers to the other measures are explored in this study.



## 6. Home educational interactions and engagements matter

Throughout the analysis the standout indicator was home support for education. This speaks to the importance of early exposure to, and consumption of, S&T information, and to attendance at science-related events to inculcate an appreciation for science knowledge. Home education support shows the importance of intergenerational curiosity and knowledge building.



## 7. Views of promise, pride and trust are egalitarian in character

South Africans tend to adopt a favourable, but not uncritical view of S&T, irrespective of background. This close alignment of views may be because these attitudes are dependent on societal values and the culture of science. To consolidate and further build these views requires ensuring a cultural system that values, celebrates and promotes S&T. We should create a cultural milieu that showcases evidence-based decision-making processes, debates, critique and contestation of ideas.



## 8. Levels of science knowledge and access to S&T information are diverse in character

The patterns of science knowledge and interest, as well as access, exposure to, and consumption of, S&T information are diverse in nature. The subgroup characteristics that inform this diversity are educational attainment, SES and being a student or learner. We recommend continued supplementary tuition and public science awareness programmes to enhance knowledge and interest. Increased science communication and engagement through multiple channels should be both encouraged and mandated. The zero rating of science educational sites, and the creation of content that is relevant to the life experiences of different segments of the society, should be encouraged.



## 9. Increase access to S&T information

The public trusts S&T news presented by television and radio but are cautious about news on social media. S&T information should be communicated in easily understandable ways on television and radio. Only 5% of the public actively accessed S&T information. We need to infuse a culture of curiosity for information and an awareness of the rich information that can be found on the internet.



## 10. Promote science engagement

Some of the largest differences among the public were in relation to science engagement. Generally, low engagement levels were observed across the five types of engagement, with the lowest for attraction based events. Campaigns to boost information consumption, interest and knowledge, combined with efforts to promote greater access to S&T sites and events, would be expected to have a positive effect on science engagement.



## 11. Educate the public about the value of traditional S&T

While the South African public reported moderate awareness of, and decreasing reservations over time about, traditional S&T, the characteristics of those who were more likely to see the promise of traditional S&T were largely Black African adults, those with less education and those living in rural areas. There is a need for a continued concerted effort to communicate, inform, educate, celebrate and create awareness about this rich field of S&T.