

Bridging the Science Engagement Divide: Pathways for Community-Based Knowledge Societies in South Africa



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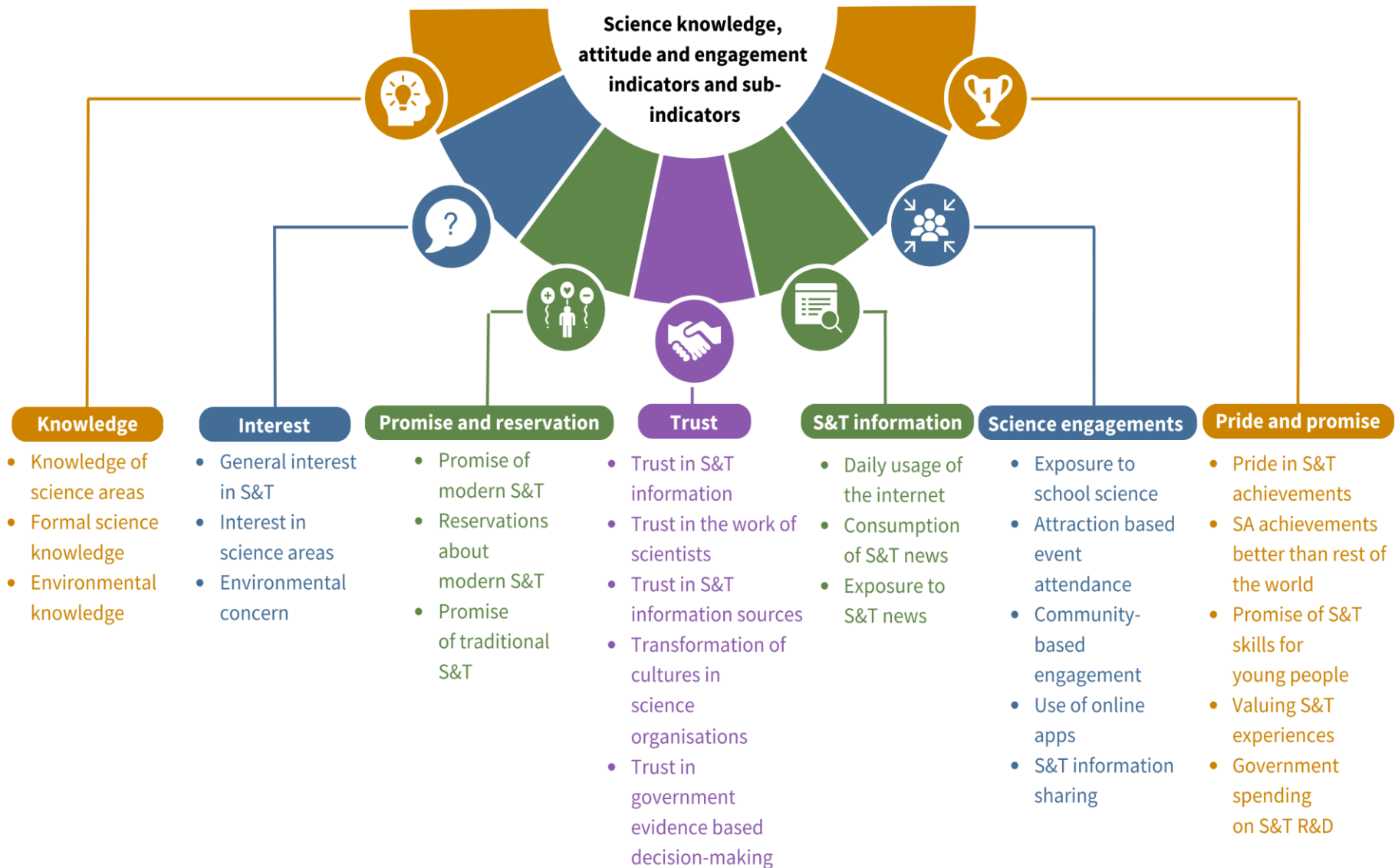
Science and society relationship

- S&T influence and shape daily life
 - Increasingly changing world
- S&T play a role in empowering citizens
 - Engaged, informed, aware society
- Inclusive science–society links are essential for equity & progress
- Digital divides & inequalities
 - Risk of people being left behind
- South Africa's dual population
 - Those with access and opportunities vs. those without

Policy context

- 2019 White Paper on STI: To support a science-literate and science-aware society by increasing (i) the reach of awareness initiatives and (ii) access to S&T information
- To assess progress to achieving the desired outcomes the WP advocated for:
 - ‘A set of indicators to measure the success of science engagement’
 - An institutionalised survey (every 5 years) on public perceptions of science...’

Indicators and measures



Science engagement

Science engagements

- Exposure to school science
- Attraction-based event attendance
- Community-based engagement
- Use of online apps
- S&T information sharing



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Conceptual framework

DEMOGRAPHY AND CONTEXT

- Age
- Sex
- Educational attainment
- Home education support
- Socio-economic status
- Employment status
- Spatial location
- Religious beliefs
- Population group

SCIENCE KNOWLEDGE AND ATTITUDES TOWARDS S&T

1. SCIENCE
KNOWLEDGE
AND INTEREST

2. PROMISE AND
RESERVATION
TOWARDS
MODERN AND
TRADITIONAL S&T

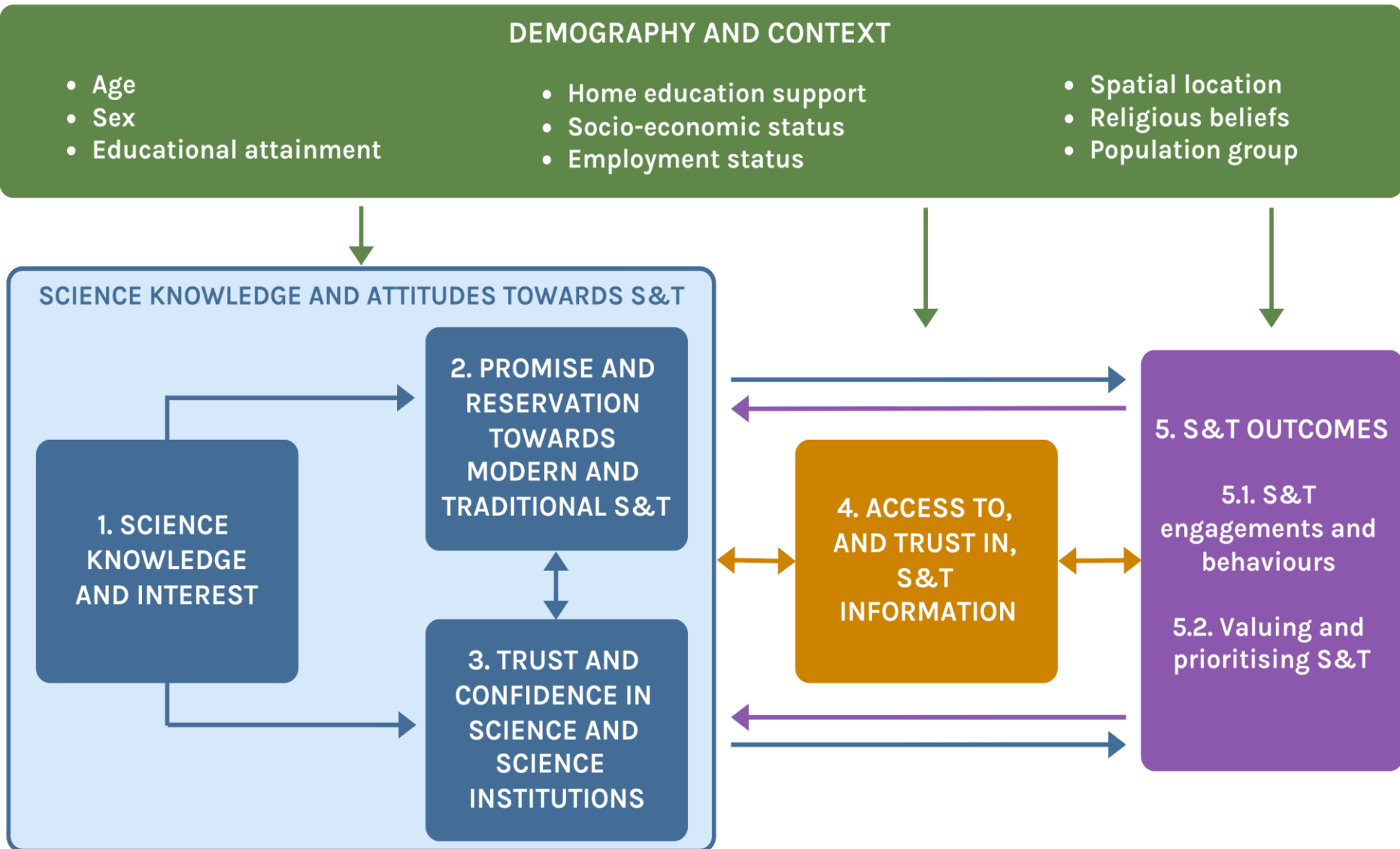
3. TRUST AND
CONFIDENCE IN
SCIENCE AND
SCIENCE
INSTITUTIONS

4. ACCESS TO,
AND TRUST IN,
S&T
INFORMATION

5. S&T OUTCOMES

5.1. S&T
engagements and
behaviours

5.2. Valuing and
prioritising S&T



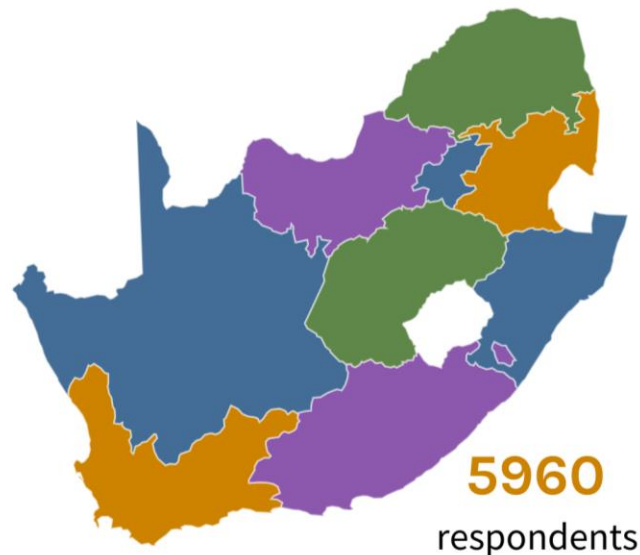
Methodology

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)



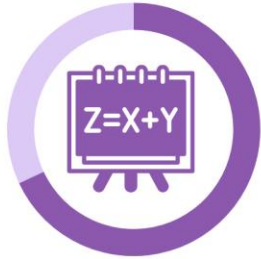
Survey instrument

- 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

STEM and SS exposure



68%

Maths/Maths Literacy



52%

Biology/Life Sciences



39%

Physical Sciences

31% took all 3 STEM subjects after Grade 9



48%

Geography



41%

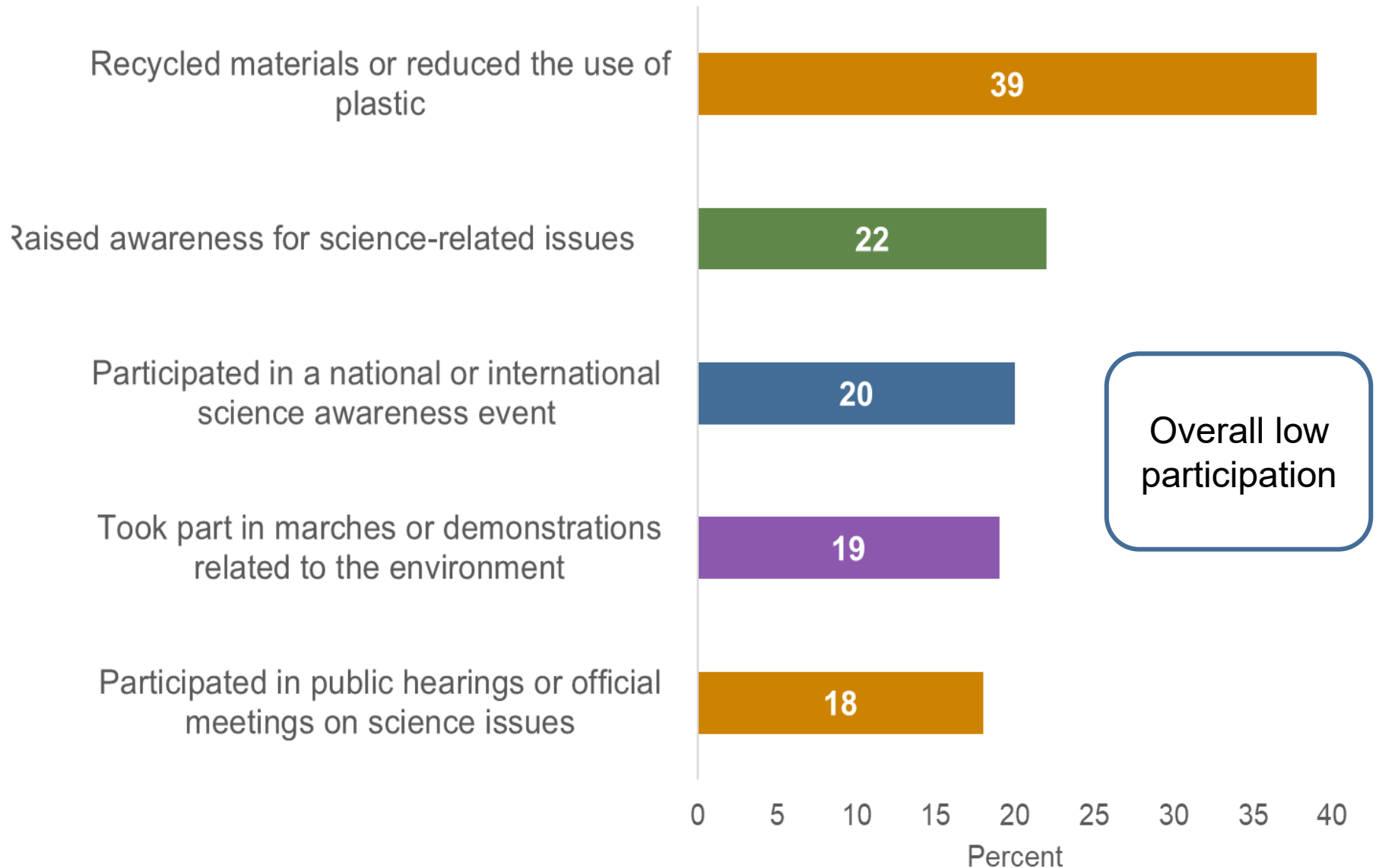
History

32% took Geography and History after Grade 9

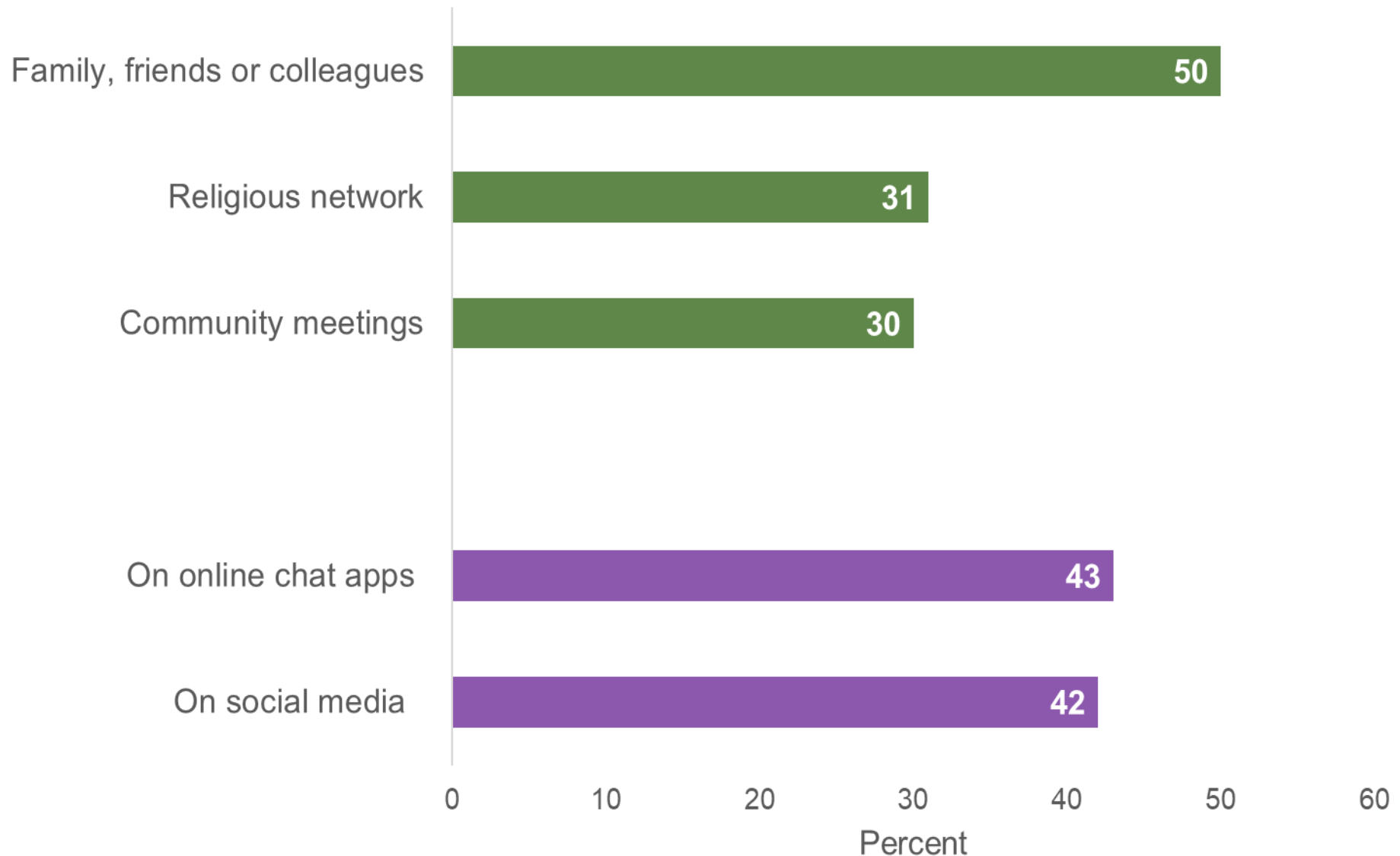
Attendance-based engagement

Science engagement space	Available in area	Attended
Public library	55	30
Public science activities e.g. community clean ups, nature walks	14	18
Museum	12	23
Botanical gardens, nature or game reserve, zoo, aquarium	10	26
Science and Technology Centre or Exhibitions	7	16

Community-based engagement



Sharing S&T information



Use of online apps



58%

Internet banking



34%

Online shopping



34%

Ride sharing applications



29%

Online government services



28%

Health technologies



22%

Online learning courses

Socio-demographic characteristics

Lower engagement

- Lower educational attainment
- Lower SES
- Unemployed
- Older
- Rural

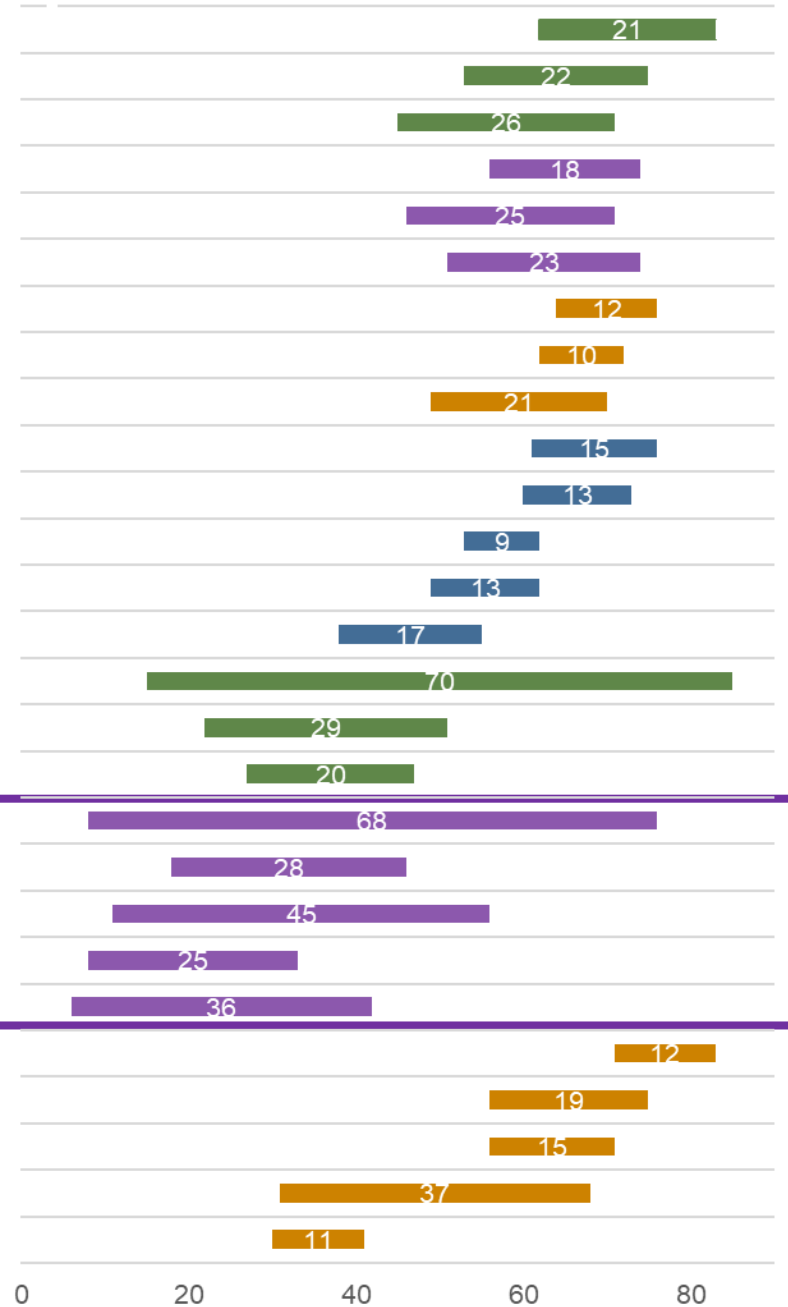
Higher engagement

- Higher educational attainment
- Higher SES
- Employed
- Younger
- Urban



SAPRS fingerprint

Indicator	Sub-Indicator measures	Average Score
Interest	Environmental concern	72
	Interest in science areas	67
	General interest in S&T	58
Knowledge	Environmental knowledge	67
	Perceived knowledge of science areas	61
	Formal science knowledge	60
Promise & Reservation	Reservation of S&T	69
	Promise of S&T	68
	Promise of traditional S&T	62
Trust	Trust in S&T information from universities	68
	Trust in work of scientists	69
	Transformation of cultures in science organisations	59
	Trust in S&T information sources	58
	Trust in government evidence-based decision making	50
S&T Information	Daily usage of the internet	50
	Exposure to S&T news	42
	Consumption of S&T news	39
Science Engagements	Exposure to STEM subjects	56
	S&T information sharing	37
	Use of online apps	32
	Community-based engagement	23
	Attraction-based event attendance	23
Pride & Promise	Promise of S&T skills for young people	78
	Pride in SA S&T achievement	66
	Valuing S&T experiences	67
	Govt spending on R&D is too low	49
	SA achievement better than rest of world	36



Enhancing engagement

1. Promote **inclusive science communication**, embed **S&T** within everyday experiences and **instil curiosity**
2. Promote **access to S&T sites and events** - addressing financial barriers
3. **Expand access** - address physical, geographic and digital inequalities
4. **Strengthen community-based** participatory initiatives
5. **Co-create** knowledge solutions
6. Encourage **lifelong science learning**
7. Ensure **sustainable funding** mechanisms

From engagement to empowerment

- **Building partnerships** - transform communities into active participants in their development
- **Bridging divides** - active co-creation for science to serve community needs and aspirations
- **Building trust** - Mutual respect, cultural sensitivity, and diverse knowledge systems
- **Local ownership** - When communities are empowered, they can drive meaningful development and impact



Role of stakeholders in bridging the gap

- **Researchers**

- Communicate findings in accessible, multilingual ways
- Involve communities through participatory research
- Mentor others and promote engagement in academia

- **Policymakers**

- Fund science engagement spaces and infrastructure
- Support science activities, including outreach
- Incentivise public engagement and promote partnerships



Role of stakeholders in bridging the gap

- **Practitioners (STEM organisations/ schools)**
 - Expand STEM programmes, including outreach
 - Use inquiry-based, locally relevant science teaching
 - Provide teacher training and peer learning networks
 - Link schools with universities and STEM organisations
 - Create science clubs, citizen science projects
- **Communities and civil society**
 - Use storytelling, art, and local media for science outreach
 - Support local science champions and youth leadership
 - Promote involvement in citizen science projects

Path forward

- Ensure **sustained engagement**, focus on **impact and inclusion**, and **centre marginalised groups**
- Investing in **participatory approaches** and **inclusive platforms** can unlock the **transformative potential of S&T for equitable community development**

Together, we can build engaged knowledge societies that leave no one behind



SAPRS Outputs

Highlights of the South African Public Relationship with Science: 2022 Survey Results



South African Public Relationship with Science: 2022 Survey Results



Highlights of the Public Relationship with Science 2022 Survey Results: Square Kilometre Array Area in the Northern Cape Province



How South Africans see science: key findings

A strong relationship between science and society ensures that people are informed about how science and technology can address development challenges. It also enables greater public participation in shaping science policies and priorities. For this HSRC study, researchers used seven indicators and 27 measures to describe the relationship between science and society. This is the first of three articles that present results from the South African Public Relationship with Science 2022 Survey.

Highlights of the Public Relationship with Science 2022 Survey Results: Cofimvaba town in the Eastern Cape Province



OUR KNOWLEDGE. OUR STORIES. SOUTH AFRICANS' CONNECTION WITH TRADITIONAL SCIENCE AND TECHNOLOGY

Knowledge takes many forms. While modern science relies on analytical and reductionist methods, traditional knowledge emphasises intuition and holistic understanding. Both of these forms of knowledge are vital and worth promoting.

By traditional knowledge, we mean local knowledge that is unique to a given culture or society and usually passed from generation to generation. It is also referred to as indigenous knowledge.

Level of traditionalness (extent to which they followed cultural practices)

Extent of traditionalness	Percentage
Not at all	19
Slightly	22
Somewhat	39
Extremely	19

More than half of the South African public said they were 'somewhat' or 'extremely' traditional.

Perceived knowledge and interest in traditional S&T

Category	Very	Somewhat	Hardly	Not at all
Knowledge	19	43	26	12
Interest	29	39	20	12

62% of the public felt they were 'somewhat' or 'very' knowledgeable about traditional S&T, while 68% were 'somewhat' or 'very' interested in these areas.

Promise of traditional S&T

- 64% Traditional small-scale farming provides healthy food for many South Africans
- 63% Traditional knowledge provides solutions to improve the quality of life
- 48% People should visit a traditional healer in times of difficulty
- 45% Traditional medicine or home remedies provide better solutions for health problems than modern medicine

Nearly two-thirds of the public saw the value of small-scale farming and traditional knowledge in improving quality of life, but fewer turned to traditional healers and medicine.

Thank you!

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