

# ACADEMY OF SCIENCE OF SOUTH AFRICA SCIENCE ENGAGEMENT STRATEGY



science & innovation

Department:  
Science and Innovation  
REPUBLIC OF SOUTH AFRICA



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## Abbreviations

APP	Annual Performance Plan
ARC	Agricultural Research Council
ASD	African Scientists Directory
ASSAf	Academy of Science of South Africa
ASSC	After-School Science Club
CPD	Continuing Professional Development
CSIR	Council for Scientific and Industrial Research
DAC	Department of Arts and Culture
DBE	Department of Basic Education
DHET	Department of Higher Education and Training
DPME	Department of Planning Monitoring and Evaluation
DSI	Department of Science and Innovation
HEI	Higher Education Institution
HRDS	Human Resource Development Strategy
HSRC	Human Sciences Research Council
IAP	InterAcademy Partnership
IID	Innovation for Inclusive Development
ISC	International Science Council
IYBSSD	International Year of Basic Sciences for Sustainable Development
LIASA	Library and Information Association of South Africa
MoU	Memorandum of Understanding
MRC	Medical Research Council
MTSF	Medium-Term Strategic Framework
NACI	National Advisory Council on Innovation
NASAC	Network of African Science Academies
NDP	National Development Plan
NGO	Non-Governmental Organisation
NIPMO	National Intellectual Property Management Office
NPHE	National Plan for Higher Education
NPO	Non-Profit Organisation
NRDS	National Research and Development Strategy
NRF	National Research Foundation
NSBPF	National Scholarly Book Publisher's Forum
NSEF	National Scholarly Editor's Forum
NSW	National Science Week
OWSD	Organisation for Women in Science for the Developing World
PAP	Pan-African Parliament
RDI	Research, Development and Innovation
SAASTA	South African Agency for Science and Technology Advancement
SACNASP	South African Council for Natural Scientific Professions
SADC	Southern African Development Community
SAJS	South African Journal of Science
SARChI	South African Research Chairs Initiative
SAYAS	South African Young Academy of Science
SciELO SA	Scientific Electronic Library Online South Africa
SDGs	Sustainable Development Goals
SEIMS	Science Engagement Information Management System
SES	Science Engagement Strategy
SFSA	Science Forum South Africa
SLA	Service Level Agreement
STEMI	Science, Technology, Engineering, Mathematics and Innovation
STI	Science, Technology and Innovation
STISA	Science, Technology, and Innovation Strategy for Africa
TIA	Technology Innovation Agency

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TVET	Technical Vocational Education and Training
TWAS-SAREP	The World Academy of Sciences Sub-Saharan Africa Regional Partner
WISET	Centre for Women in Science, Engineering and Technology



## Section A

### 1. Introduction

Science and Innovation<sup>1</sup> is critical to understanding current and emerging issues. It plays a key role in framing the major societal questions that must be addressed and identifying how they might be best tackled. It underpins many significant developments and technological breakthroughs in medicine, the economy, education, design and construction, architecture, sports, food and nutrition, and more. Science and innovation are, too, in the public consciousness. Not only in terms of its key role in knowledge production but also in how critical thinking and evidence-based decision-making help individuals, families, businesses, governments, and communities make informed choices about the future.

The Academy of Science of South Africa (ASSAf) is where theory and creativity, and professional practice are often interrelated, with a range of well-established applied, collaborative, and socially engaged research methods employed. The Academy is ideally positioned to conduct evidence-based research, particularly since the organisation represents the collective voice of the most active scholars in scholarly enquiry. It is committed to creating local and global change, generating knowledge, and stimulating discovery through creative and intellectually rigorous thinking and practice. The Department of Science and Innovation (DSI) considers the Academy to be “a platform to provide timely broad dialogues to managed engagements with key stakeholders around disputed developments and issues with a strong science and technology component”.<sup>2</sup> To this end, ASSAf is committed to making its research, scholarship, and practice come to life, engaging a broad range of publics<sup>3</sup> in a positive, mutually beneficial exchange of ideas in a socially conscious way.

The use of science, technology, and innovation (STI) is intended to improve the quality of the daily lives of people and underpins economic prosperity. It helps address the main challenges as a developing nation, the environment, and the planet. Examples of the use of STI for the benefit of society include:

- Eradicating poverty and inequality;
- Tackling and adapting to climate change;
- Addressing rising populations and the consequent pressure on food, water, electricity, and other natural resources;
- Reducing the impact of human diseases and animal diseases, and
- Contributing to good policy-making and sound government.

STI becomes more relevant and useful when a wider society is involved. Science engagement values and facilitates participation and mutual learning amongst publics, scientists, and others concerning the development and use of STI's in society. Mutual learning occurs when people listen to each other, respond to, refute, and build on one another's contributions while exploring issues. There is recognition of the importance of multiple

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<sup>1</sup> For this strategy, ASSAf adopts a broad view of STIs representing its Membership, including the natural and physical sciences and the humanities and social sciences

<sup>2</sup> Quote is taken from the DSI Science Engagement Strategy

<sup>3</sup> The term “publics” as opposed to public or general public is used frequently in this document to acknowledge the multiple identities and diversities that exist within the concept of the public. In other words, there isn't a single or unified public.

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perspectives and domains of knowledge, and a sense of shared responsibility will be created when involving the public and diverse stakeholders.

This Science Engagement Strategy (referred to hereafter as the Strategy) sets out a pathway for promoting engaged research in ASSAf, research that is more relevant, representative, and connected to society to ensure transformation, economic growth, social progress, and the improvement of quality of life.

## 2. Definitions

Drawing from local and international tried and tested, evidence-based science engagement models, ASSAf aligns its definition of science engagement with that of the DSI. Science engagement is “an activity, event, or interaction characterised by mutual learning among scientists and people of varied backgrounds, scientific expertise, and life experiences”<sup>4</sup>.

The term ‘engagement’ is used by ASSAf to emphasise accountability, active participation, equal partnership, and transparency and captures reflection, feedback, and bottom-up learning. Science ‘engagement’ is distinguished from science ‘communication’, in which the latter is largely a one-way flow of information from expert to layperson. It is important to note that science engagement, as articulated in this strategy, is closely related to, and influenced by science communication. While science ‘engagement’ and ‘communication’ are treated as separate concepts and retain different features, ASSAf acknowledges that they intersect and have a symbiotic relationship. For this Strategy, separating these concepts is deliberative and considered one of substance. Science engagement encompasses the different ways publics are engaged in dialogue with the design, process, and outcomes of the Academy’s research.

## 3. ASSAf Goals and Mandate

ASSAf is the only Academy officially recognised by the government of South Africa. The Academy was established by an Act of Parliament (ASSAf Act 61 of 2001<sup>5</sup>) to provide evidence-based scientific advice on societal policy issues. The key objective of ASSAf is to promote and apply scientific thinking in the service of society. This commitment is reflected in the 2021/22 ASSAf Strategic Plan within Outcome 2 on science engagement, which promotes public interest in science and the need for science education amongst publics.

Much valuable work has already been done in this area but ASSAf believes that there is a need for a more interactive relationship between research and innovation, policy, business, education, media, and the public.

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<sup>4</sup> <https://www.dst.gov.za/index.php/resource-center/strategies-and-reports/3178-science-engagement-strategy>

<sup>5</sup> <https://www.assaf.org.za/wp-content/uploads/2014/06/ASSAf-Act-No.-67-of-2001-as-Amended-Act-No.-16.-2011-and-No.-7.-2014.pdf>

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## 4. Organisational Context

### 4.1 Policy Environment of the Science Engagement Strategy

The ASSAf Science Engagement Strategy hinges on various national policy frameworks, including the National Development Plan (NDP) and strategies of government departments. Some policies/strategies/frameworks/drivers considered in this strategy are:

- The **Science, Technology, and Innovation Strategy for Africa (STISA)**<sup>6</sup>, calls for greater coordination among health stakeholders and other related sectors contributing to the *development of science and technology and building governance structures to promote ethics and research integrity, thus increasing public trust in research.*
- The **National Research and Development Strategy (NRDS)**<sup>7</sup> identifies human capital development and the need to make science *attractive, accessible and relevant through media, public engagement and promotional programmes, as critical.*
- The **Human Resource Development Strategy (HRDS)**<sup>8</sup> recognises the need to implement a systematic strategy for human resources development to *increase participation rates in mathematics and science, the reach of science awareness campaigns, and to identify and nurture talent and potential in the fields of science, engineering, technology, and mathematics.*
- The **National Plan for Higher Education (NPHE)**<sup>9</sup> provides an implementation framework for realising the objectives of the White Paper on *transforming the higher education system to meet the social and economic development needs of the country, among others through public-private partnerships.*
- The **Medium-Term Strategic Framework (MTSF)** outlines six MTSF priorities of which one is delivering effective science engagement and communication at all stakeholder levels to promote public understanding of science and the public's understanding of the value of science thereby also building on social cohesion (MTSF Priority 5).
- The **White Paper on Science, Technology and Innovation (STI)**<sup>10</sup> prioritises the development of science engagement and communication skills among journalists, scientists, students, learners, educators and science interpreters. The White Paper's policy intents towards expanding and transforming human capabilities are – among others - *a science-literate and science-aware society part of the effective functioning of the National System of Innovation (NSI).* Such a society is able to evaluate the products of science, uses the processes of science in their daily lives (e.g. asking questions, collecting and analysing evidence, and evaluating possible results), and engages in debate on science-related matters of public interest. Greater public awareness of scientific issues will also stimulate the interest of young South Africans in pursuing careers in science – thereby increasing the number of secondary school students choosing subjects to prepare them for university studies in the

<sup>6</sup> <https://au.int/sites/default/files/newsevents/workingdocuments/33178-wd-stisa-english - final.pdf>

<sup>7</sup> [https://www.gov.za/sites/default/files/gcis\\_document/201409/rdstrat0.pdf](https://www.gov.za/sites/default/files/gcis_document/201409/rdstrat0.pdf)

<sup>8</sup> [https://www.gov.za/sites/default/files/gcis\\_document/201409/doehrds-sa22022010.pdf](https://www.gov.za/sites/default/files/gcis_document/201409/doehrds-sa22022010.pdf)

<sup>9</sup> <https://www.dhet.gov.za/HED%20Policies/National%20Plan%20on%20Higher%20Education.pdf>

<sup>10</sup> [https://www.dst.gov.za/images/2019/White\\_paper\\_web\\_copyv1.pdf](https://www.dst.gov.za/images/2019/White_paper_web_copyv1.pdf)

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disciplines of Science, Technology, Engineering, Mathematics, and Innovation (STEMI).

- The **2022 Science, Technology, and Innovation Decadal Plan**<sup>11</sup> serves as an implementation plan for the 2019 White Paper on STI. Turnkey interventions to achieve a science literate and science-aware society are set out in the Decadal Plan.
- The **DSI Science Engagement Strategy (SES)**<sup>12</sup> provides the basis for the national coordination of science engagement initiatives to *stimulate an appreciation of the role of science and technology in building a knowledge-intensive economy and a better life for all*. It is intended to encourage and improve the coordination of science promotion, communication and engagement activities across all DSI public entities, universities with government departments and science councils, museums and partners outside the public sector. The **Science Engagement Strategy Implementation Plan**<sup>13</sup> provides an overview of projects and initiatives towards the implementation of the SES and provides a valuable framework for the ASSAf SES.
- **ASSAf's 2020/21–2024/25 five-year Strategic Plan (SP)** and its strategic direction is generally aligned with the DSI's STI White Paper, Decadal Plan, the MTSF, the NDP and the SDGs. ASSAf's science engagement activities are consistent with the DSI SES (2015). ASSAf has significantly contributed to the use of evidence-based science in responding to the health and socio-economic challenges facing South Africa due to the COVID-19 pandemic. ASSAf supports the "Just Transition" in promoting a low carbon emission agenda and a climate resilient economy that leaves no one behind.<sup>14</sup>

## 4.2 Current Science Engagement Practices

ASSAf's current programme of work in science engagement is centred around science literacy, science awareness and science communication. Activities in these areas are based on a unique mix of experience and innovation in the science communication area based on a content-centric approach exploiting the convergence of multiple distribution channels. From this perspective, ASSAf acts as a knowledge broker, enabling its existing content to be accessible across multiple channels.

Current science engagement activities include:

- **Coproducing research:** Through multi-disciplinary teams, conducting relevant research such as evidence-based consensus studies.
- **Collaboration:** Collaborating with local, regional, and international partners.
- **Dissemination:** Dissemination of publications such as policy briefs and the publishing of the open access *South African Journal of Science* (a high-impact peer-review journal), the *Quest Science for South Africa Magazine*, and the management of SciELO SA, a platform for indexing peer-review accredited South African journals.
- **Events and fora:** ASSAf uses its convening power as the primary science Academy in South Africa to host science events and fora. Examples include webinar series,

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<sup>11</sup> <https://www.bizcommunity.com/Article/196/379/234138.html>

<sup>12</sup> [https://www.saasta.ac.za/saasta\\_wp/wp-content/uploads/2017/11/Science\\_Engagement\\_Strategy-11.pdf](https://www.saasta.ac.za/saasta_wp/wp-content/uploads/2017/11/Science_Engagement_Strategy-11.pdf)

<sup>13</sup> [https://www.saasta.ac.za/saasta\\_wp/wp-content/uploads/2018/03/Science-Engagement-Strategy-Implementation-Plan-Approved.pdf](https://www.saasta.ac.za/saasta_wp/wp-content/uploads/2018/03/Science-Engagement-Strategy-Implementation-Plan-Approved.pdf)

<sup>14</sup> Academy of Science of South Africa Institutional Review Report 2022  
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roundtables, scientific talks, and lectures. These events are, at times, convened in collaboration with local, regional, and international partners.

### 4.3 SWOT Analysis

Reflecting on the recommendations from the Institutional Review (2016-2020) and discussions among the Secretariat, ASSAf has re-looked at its strengths, weaknesses, opportunities, and threats when delivering on the ASSAf science engagement mandate (**Table 1**, p. 9).

These practices reflect robust and dynamic outreach activities. However, ASSAf notes the following:

- A lack of a clear and shared understanding of science engagement work and its application in the operations of the Academy;
- An absence of a strategic framework for science engagement - engagement tends to be *ad hoc* and less focused. Resources are less efficiently applied and have less impact, and the programmes are less accountable than if underpinned by a comprehensive strategy, and
- Reactive engagement: Without forward strategic planning of science engagement, activities are driven by external events more than by internal intention.

**Table 1: SWOT analysis on ASSAf's current science engagement practices**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Diverse ASSAf Membership</li> <li>• Strong, dedicated, knowledgeable Secretariat</li> <li>• ASSAf continental and global footprint as part of NASAC, IAP and TWAS</li> <li>• Strong partnerships with South African Agency for Science and Technology Advancement (SAASTA), DSI and DHET</li> <li>• Quality evidence-based research is available as open access through various ASSAf platforms</li> <li>• Active and vibrant South African Young Academy of Science (SAYAS)</li> <li>• Active performing Scholarly Publishing Programme</li> <li>• Extensive science network</li> <li>• Track record of successful projects e.g. AOSP, IYBSSD, SciELO SA, NSEF, NSBPF, Peer-review panels – ASSAf being a leader</li> </ul>	<ul style="list-style-type: none"> <li>• Limited direct involvement from citizens</li> <li>• Lack of funding to incentivise scientists for time committed to ASSAf activities since participation is voluntary</li> <li>• Websites not thematically aligned with activities</li> <li>• Registration forms and evaluation forms for events are not standardised, therefore data cannot be compared or aligned</li> <li>• TikTok and Instagram profiles are lacking</li> <li>• ASSAf can do more in terms of creating trust in science among the general public</li> <li>• SE indicators indirectly included in the APP</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Increase collaboration with various stakeholders such as government department, science centres, institutions of higher learning, the public, media and science interpreters</li> <li>• Influence government policies in addressing socio-economic issues</li> <li>• Develop products to bring together all networks/stakeholders</li> <li>• Engage with professional bodies/societies</li> <li>• Utilising Google AdSense to increase ASSAf visibility/footprint</li> </ul>	<ul style="list-style-type: none"> <li>• Membership participation is low in promoting ASSAf activities</li> <li>• The recent COVID-19 pandemic halted many in person initiatives for outreach; not all of the publics have access to virtual engagements</li> <li>• No <i>ad hoc</i> and rapid responses to societal challenges</li> <li>• Little visibility with other ministries beyond DSI</li> <li>• Lack of policy advice</li> <li>• Little bespoke science engagement activities</li> </ul>



While ASSAf has many types of activities that promote science engagement, there are still many areas for improvement. Through this Strategy, ASSAf will, thus, harness its lessons and experiences to effectively tackle its full potential to maximise the impact of engagement activities.

## Section B

# 5. ASSAf Science Engagement and Communication Framework

## 5.1 Purpose of this Strategy

This Strategy serves as a framework for establishing a programme of work on science engagement and communication at ASSAf. As such, it complements the Academy's broader Strategic Plan 2021/22 – 2024/25 and Transformation Strategy (2023/24).

## 5.2 Our Approach

### 5.2.1 Using a Mixed Approach Framework

The literature shows that there are three broad 'waves' of science engagement (Hetland, 2015<sup>15</sup>, DeWitt, Archer and Mel, 2016<sup>16</sup>, Reinke, Bredenoord, and van Mill, 2020<sup>17</sup>):

- (a) the **deficit model**, a one-way communication model, where information flows from experts to the public (e.g. social media, websites, talks, etc.);
- (b) the **dialogic model**, which recognises that engagement could be more effective as a two-way discussion between scientists and the publics (e.g. interactive museum exhibits, conferences, etc.);
- (c) the more recent evolution of this model is for **participatory engagement** in which publics are not considered passive audiences but participants in an interactive engagement where scientists and publics can learn from each other.

These three modalities bring something of value to ASSAf's outreach activities. ASSAf favours an integrated approach, adopting all three of the above modalities and sees itself not only as a disseminator of knowledge but as a facilitator of the production of new knowledge and understanding through dialogue and interaction among scientists, publics, and policymakers. The organisation believes all three models can coexist as mechanisms or instruments to foster increased awareness of science and shared responsibility, leading to civic participation and decision-making. The features of these modalities introduce enhanced and dynamic engagement when combining scope and strength into a homogenous and integrated model.

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<sup>15</sup> Hetland, P. (2014). 'Models in science communication policy'. *Formatting Public Engagement and Expertise*. NORDIC Journal of Science and Technology Studies 2 (2), pp. 5–17.

<sup>16</sup> DeWitt, J., Archer, L. and Mau, A. (2016). 'Dimensions of science capital: exploring its potential for understanding students' science participation'. *International Journal of Science Education* 38 (16), pp. 2431–

<sup>17</sup> Reinke, C., Bredenoord, A. and van Mill, M. (2020). From deficit to dialogue in science communication. *EMBO Reports* 21(9).

This integrated approach to science engagement has elements of communication and engagement. It is rooted in the Academy's vision, mission and its six strategic outcomes outlined in the ASSAf Strategic Plan for 2020/21-2024/25, namely:

- Independent, authoritative, and influential science advice
- Science engagement
- Knowledge mobilisation
- Facilitating partnerships
- Scholarship support
- Supporting transformation

This Strategy will scale up science engagement and communication across ASSAf's five interconnected strategic pillars, which determine the trajectory of the Academy with their associated publics and possible stakeholders, namely (**Appendix A**, p. 25):

- i. Science for science: scaling up of science, technology, and innovation;
- ii. Science for policy: guiding, advising, and influencing policy;
- iii. Science for society: addressing the main challenges we face as a nation and as a planet;
- iv. Science for education: targeting grade 10-12 learners, and
- v. Science for business: using science and technology to stimulate innovation.

### 5.2.2 Doing Things Differently

For the Academy to have impactful science engagement, ASSAf endeavours to work more smartly by introducing three shifts in its approach (**Table 2**, p. 11):

**Table 2. Science Engagement Approaches**

From	To
Deficit model of science engagement	Dialogue model which foregrounds a bi-directional flow of information where a key feature is mutual learning.  Developing bespoke engagement that catalyses significant, positive, demonstrable change and builds relationships.
<i>Ad hoc</i> and reactive science engagement	Planned, impactful science engagement.
Action orientated science engagement	Results-orientated science engagement where performance can be measured.
Managing transactional relationships	Fostering a sustained culture of engagement amongst ASSAf's Members where meaningful stakeholder management occurs.

## 6. Principle Elements that Guide the Strategy

The Strategy builds upon ongoing ASSAf initiatives, including the ASSAf Strategic Plan for 20/21-2024/25. The Strategy follows five principles:

- **Building on the past:** Building on the past and consolidating science engagement practices that have worked well for ASSAf;
- **Relevant science engagement:** Prioritising science engagement interventions that are aligned with the vision of ASSAf;
- **Balanced:** Demand - and supply-driven, top-down and bottom-up engagement;
- **Culture and learning driven:** The importance of an organisational culture that is conducive to mutual learning, and
- **Results driven:** The results of science engagement are measured.

### 6.1. Theory of Change

Science engagement in ASSAf is supported by a theory of change that limits the model to activities that fit the Academy's definition of science engagement – intentional interactions with opportunities for multidirectional learning.

#### 6.1.1 ASSAf's Science Engagement Vision

ASSAf's science engagement vision is to **grow beyond communication by engaging and involving people with STI which has relevance to all aspects of their daily lives and, therefore, maximises the impact of research.** Through addressing complex scientific questions and controversies in a way that fosters responsible and appropriate scientific knowledge production and decision-making, the Academy will create opportunities to exchange knowledge, ideas, and perspectives that involve the participation of all components of society. This exchange will help create well-informed, empowered publics who are better equipped to contribute to our understanding of the world and to responsible decision-making.

#### 6.1.2 How to Achieve this Vision?

To this end, four outputs are identified, namely:

- Supporting collaboration and partnerships:** The benefits of research and innovation are shared widely by supporting collaboration and valuing diverse forms of knowledge.
- Convene public debate about relevant issues:** The Academy's science and innovation are shared and debated confidently. Evidence is used to show how it is relevant to daily life and used in decision-making.
- Sharing of research and innovation:** Build a sense of shared endeavour by making research and innovation relevant and accessible to all.
- Building the capacity of Members to engage:** Staff and Members will have the capability and skills to engage with different audiences about their research and increase impact.

### 6.1.3 Pathway to Impact

The Logic Model (**Table 3**, p. 13) represents the pathway to impact, which depicts the long-term impact of science engagement in the right-hand column. The large-scale goals articulated in this column are cross-cutting scientific and societal impacts envisioned to result from an aggregation, over time, of outcomes of public engagement activities as they interact with outside social, political, and economic influencers. These aspirational goals represent the long-term purpose and potential for aggregate change due to science engagement.

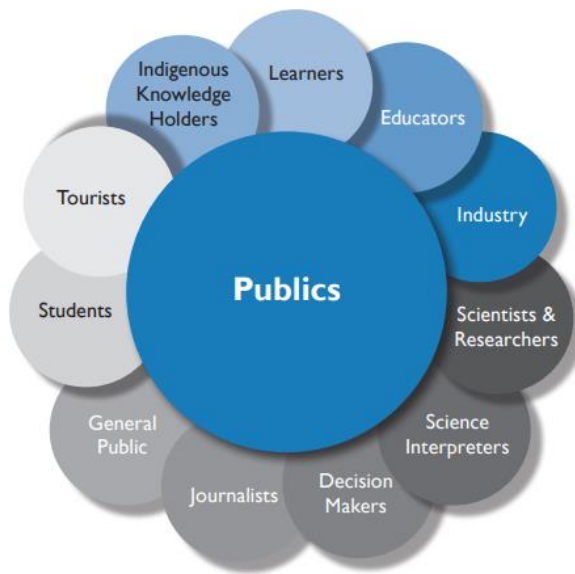
The rest of the Logic Model, viewed from left to right, depicts the mechanisms and experiences leading to the larger vision of impact. In short, the model depicts how Members deploy inputs and resources into activities with involved participants to achieve outcomes.

**Table 3: ASSAf Logic Model for Science Engagement**

Inputs	Participants	Short-term outcomes	Medium-term Outcomes	Long-term Outcomes	Impact
<ul style="list-style-type: none"> <li>• Research</li> <li>• Strategy for science communication</li> <li>• Participants</li> <li>• Science engagement training</li> <li>• Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Scientists</li> <li>• Government</li> <li>• Industry</li> <li>• Civil society</li> </ul> <p><b>Activities</b></p> <ul style="list-style-type: none"> <li>• Public dialogue approaches</li> <li>• Policy deliberation approaches</li> <li>• Knowledge co-production approaches</li> <li>• University-led collaboration approaches</li> <li>• National, regional and international collaboration approaches</li> <li>• Everyday engagements</li> </ul>	<ul style="list-style-type: none"> <li>• Scientists are humanised</li> <li>• Positive effect</li> <li>• Members have an increased sense of science engagement identity</li> <li>• Intention to act or engage again</li> <li>• Increased skills and ability to engage</li> </ul>	<ul style="list-style-type: none"> <li>• Build trust between the publics and scientists</li> <li>• Longer-term positive effect about the value of science</li> <li>• Build relationships to continue through science engagement</li> <li>• Act on something from engagement</li> <li>• Be ready to advocate/amplify</li> <li>• Increased willingness to consider science and society interactions</li> </ul>	<ul style="list-style-type: none"> <li>• Build trust between publics and scientists</li> <li>• Long term positive effects</li> <li>• Engagement is part of work and life</li> <li>• Institutional change</li> <li>• Frame science to be relevant to publics</li> </ul>	<ul style="list-style-type: none"> <li>• Sound, evidence based public decision making</li> <li>• Dialogue on critical science-society issues embedded in public discourse</li> <li>• Influence policy decisions</li> <li>• Research that addresses societal needs</li> <li>• Science embedded in daily lives</li> </ul>

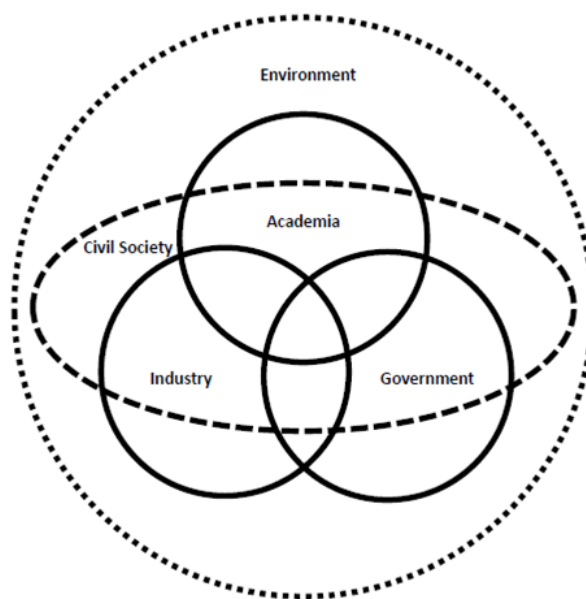
## 7. ASSAf Science Engagement Target Audience

ASSAf has a diverse target audience group that varies according to the nature of its science thematic areas (**Figure 1**, p. 13; **Appendix A**, p. 25 & **Appendix B**, p. 26).



**Figure 1: Publics targeted by the Strategy**

The Academy integrates the Quadruple Helix Model, focusing on government, academia, industry, and civil society (**Figure 2**, p. 14). The quadruple helix collaboration creates science and innovation through interactive processes in which different groups of actors contribute their knowledge due to their function in society. Because mutual impacts are fundamental to public engagement, participants represented in the model include scientists, government, industry, and civil society, with the latter three operating primarily outside of the practice of science.



**Figure 2: Quadruple Helix Model<sup>18</sup>**

Using the Quadruple Helix Model as a guide, ASSAf activities (events and publications) will:

- Encourage collaboration between academia, industry, government, and society by facilitating dialogue and collaboration between these different stakeholders to address complex societal challenges. This will include roadshows, workshops,

<sup>18</sup> [https://upload.wikimedia.org/wikipedia/commons/e/e2/Five\\_Helices\\_of\\_the\\_Quintuple\\_Helix.png](https://upload.wikimedia.org/wikipedia/commons/e/e2/Five_Helices_of_the_Quintuple_Helix.png)  
ASSAf Science Engagement Strategy - Approved and endorsed by Council 7 February 2024

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conferences, and forums that bring together ASSAf Members and representatives from academia, industry, government, and civil society to discuss issues of common interest.

- Encourage researchers and innovators to collaborate with industry and society to develop innovative solutions to societal problems. This can be done by sharing funding opportunities for research and innovation projects that involve collaboration between the different stakeholders. ASSAf is already accomplishing this through delivery mechanisms as part of its Science Advisory (SAP) and Strategic Partnership Programmes (SPP).
- Promoting science literacy and public engagement by continuing to organise and participate in science festivals, exhibitions, and outreach programs that promote science communication and encourage public participation in science, especially among secondary school learners. These initiatives will involve collaborations between researchers, industry partners, professional bodies, and civil society organisations to ensure that the content is relevant and engaging to the public. ASSAf is already accomplishing this through delivery mechanisms as part of its SPP.
- Using its position as a national Academy to advocate for policy change that promotes the integration of the Quadruple Helix Model into research and innovation policy. This will among others involve engaging with policymakers and other stakeholders to promote policies that encourage collaboration between academia, industry, government, and society. ASSAf is already accomplishing this through delivery mechanisms such as evidence- based/consensus studies, accompanied by policymaker's booklets.

## Section C

### 8. Implementation, Monitoring and Evaluation

#### 8.1 Science Engagement Activities

The *White Paper for Science, Technology and Innovation* (2019) and the Decadal Plan (draft) published by the DSI outlines the priority areas for the use of STI to build a better future for all South Africans. These priorities are further linked with other initiatives like the Sustainable Development Goals (SDGs) encapsulated in Agenda 2030, the Medium Term Strategic Framework (MTSF) (2019-2024), and other priorities embedded in the grand challenges addressed by the DSI with programmes like the *Science Missions* and *Foresight Domains*, among others (see **Figure 3**, p. 15) as a guide to plan for activities when addressing these challenges within the National System of Innovation (NSI).



**Figure 3. Schematic overview of ASSAf priorities nested within the NSI**

As we address these challenges, it is obvious that they are all connected and that we are truly living in a time of polycrisis, which refers to a complex set of interconnected challenges that can have a devastating impact on individuals, societies, and the planet. Polycrisis can arise from a variety of factors, including climate change, economic inequality, pandemics, and political instability. They may also be caused by human actions, such as war and environmental destruction. The polycrisis in South Africa is characterised by several factors, including the triple burden of unemployment, inequity, and poverty (**Figure 3**, p. 15). Altogether, the polycrisis is having a devastating impact on the people of South Africa resulting in millions of people struggling to meet their basic needs, and there is a growing sense of hopelessness and despair.

Following discussions at the ASSAf Council Strategic Meetings in 2022 and 2023, the Council identified several areas of focus out of which the following thematic areas were prioritised: **(a) climate change, (b) energy sustainability, (c) digital transformation, and (d) future of society.**

ASSAf projects are conducted within two programmes: the Scholarly Publishing Programme (SPP) under the directorship of Ms Susan Veldsman and the Science Advisory Programme and Strategic Partnerships (SAPSP) coordinated by Dr Melusi Thwala. These activities are supported by the Administration and Governance Programme, which includes Finance and Risk, the Human Resources Programmes and Communications.

Adopting the polycrisis terminology, the ASSAf approach going forward is to work using a transdisciplinary approach to focus on the four thematic areas listed above. The planned activities recognises other national initiatives around these topics and the need for ASSAf to work in collaboration with other stakeholders and partners to achieve redress for poverty, unemployment, inequalities while being inclusive of women, youth, and people with disabilities.

Themes covered through ASSAf activities/events are closely aligned with the SDGs, namely water and sanitation (SDG 6: Clean Water and Sanitation); women empowerment (SDG 5: Gender Equality); agricultural diversity (SDG 2: Zero Hunger); sustainability (SDG 11: Sustainable Cities and Communities); a range of reports on an array of health-related challenges (including Covid-19) (SDG 3: Good Health and Well-being); poverty (SDG 1: No Poverty), unemployment (SDG 8: Decent Work and Economic Growth) and inequality (SDG 10: Reduced Inequalities); innovation (SDG 9: Industry, Innovation and Infrastructure); and just transition (SDG 7: Affordable and Clean Energy).

A search of the ASSAf Research Repository since its implementation (2015) resulted in a list of events/activities/publications aligned with the SDGs (**Appendix C**, p. 27).

The ASSAf Transformation Strategy 2022 guides the transformation objectives of the Academy with regards to ASSAf Membership, Inclusivity (gender, disability, race, geographical, discipline), and knowledge transformation.

By means of virtual platforms ASSAf can host more events with a wider reach, provided participants have access to data and the facilities to connect to the Internet. In addition to plans to host webinars by the different Programmes, ASSAf also plans to use these tools of connectivity to extend the ASSAf footprint using the multidisciplinary nature of the ASSAf Membership to contribute to thematic activities associated with national celebrations such as Africa Day, Human Rights Month, Youth Month, Women's Month, Heritage Month, National Science Week and Open Science Week to profile the Academy. Roadshows and specific activities undertaken by Quest will be key.

Activities which advance the Strategy will be outlined in the Annual Performance Plans and Annual Reports.

## 8.2 Science Communication Activities

Science communication is the other arm in the delivery pipeline of activities conducted by the Academy. It is important to present the messages in ways that engage the audience and recipients of ASSAf products. The quarterly ASSAf e-Newsletter, which was reformatted in September 2021, includes articles from the ASSAf Executive Officer, President, ASSAf Members, ASSAf Secretariat, and other stakeholders. The focus of the content is on thematic issues in a manner that enhances the reader's experience while providing a narrative.

### 8.2.1 Science Publication Platforms and Compliance Reporting

ASSAf engages rigorously with different stakeholders (DSI, SAASTA, science councils, government departments/entities, higher education institutions, the network of science centres, industry, non-governmental organisations and professional bodies, the media, and society (incl. schools)) on science (see **Figure 1**, p. 13).

Various communication platforms are used to announce and provide open access to science publications (research products) to advice, inform, stimulate dialogue, and allow for further scrutiny by the public. This is in the form of publications available as open access through:

- ASSAf Research Repository
- Scholarly journal publication platforms
- Websites
- Social media
- Newsletters
- Mailing lists

Both the ASSAf website ([www.assaf.org](http://www.assaf.org)) and the ASSAf Research Repository (<https://research.assaf.org.za/>) host all ASSAf publications, and the ASSAf Communications team also widely distributes other products such as media releases and statements.

The ASSAf Research Repository is used to centralise all ASSAf research outputs, increase its visibility through Google and Google Scholar, and guarantees accessibility over time. The *South African Journal of Science (SAJS)* is hosted as part of the Khulisa Journals service offered by ASSAf, while *Quest* magazine is hosted on a Wordpress website. Persistent web addresses (handles/DOIs) are assigned to research output to track impact through citations.

ASSAf is obligated to report to various divisions within the DSI, the Minister of Higher Education, Science and Innovation of SA, and the Parliamentary Portfolio Committee on Higher Education, Science, and Innovation. It is important that these reporting avenues are effective to ensure that policymakers are aware of the activities undertaken by the Academy and that ASSAf is a partner who is committed to supporting national imperatives.

### 8.2.2 Social Media Posts and Reach

These include mailing lists emails/announcements, Twitter posts, Facebook posts, LinkedIn posts, YouTube videos, Google AdSense campaigns, Radio Interviews, and Newspaper/Media Articles published that reference ASSAf. ASSAf does not currently have Instagram or TikTok profiles, something that will be considered going forward.

ASSAf recognises social media as a valuable vehicle to enhance its visibility, for information sharing/advertising and to stay connected with its publics. Through its website, Facebook, Twitter and LinkedIn pages ASSAf Members are profiled and recognised for excellence and accolades and announcements are shared. Recordings of the Academy's webinars are made available for easy access on ASSAf's YouTube channel. ASSAf will continue to drive these communication platforms to enhance reach and engagement with a wider audience.

As of 31 December 2022, the ASSAf Facebook account had 2 670 Likes ('fans') and ASSAf has steadily grown its follower audience to 9 648 followers. ASSAf's recently created LinkedIn page has 179 followers. The YouTube channel has 290 subscribers and to date, 95 videos have been uploaded to the channel.

Media coverage has been extensive and for the 2022/23 period 76 254 308 individuals were reached, more than the reach for 2021/22, but with lower advertising value.

Instagram and TikTok profiles for ASSAf are lacking, and the branding for individual projects/products are often stronger than the main ASSAf brand itself.

## 8.3 Targets and Indicators

Collectively, ASSAf activities as discussed in the Strategy effectively contribute to several indicators with targets outlined below (Table 4).

**Table 4: ASSAf output indicators and annual targets**

Output Indicators	Annual Target
1. Number of consensus studies	2
2. Number of proceedings reports, policy-makers booklets and statements	8
3. Number of special public lectures (including science for business)	5
4. Number of webinars, workshops/conferences	12
5. Number of newsletters	4
6. Number of media releases	20
7. Number of SAJS publications	6
8. Number of Quest publications	4
9. Institutional repository and website	8
10. Number of new journal titles on SciELO platform	2
11. Number of strategic partnerships	4
12. Number of activities supported with other African Academies	4
13. Number of young scientist activities supported	4
14. Number of ASSAf Gold Medals awarded	1
15. Number of Biennial Humanities Book Award presented (including early career scientists)	2 & 2
16. Transformation of Membership (gender, race, geographic region, discipline)	As best as possible

## 8.4 Expanding Collaboration and Engagement with Stakeholders

Through the implementation of this Strategy, it is anticipated that the ASSAf footprint in science engagement and communication would be enhanced as follows:

- ASSAf's evidence-based consensus studies and other activities are more apparent to all its publics, but specifically to government departments, government clusters and the Parliamentary Committees to have some value in the policy-making landscape.
- At the national level, the Academy should more actively pursue greater engagement with other ministries beyond the DSI (Dept. of Science and Innovation) and reach out to other agencies in the science system such as NACI (collaborate on innovation), SACNASP, DHET (Dept. of Higher Education and Training), DAC (Dept. of Arts and Culture), etc.
- Through closer engagements with local government and demonstrating the potential that collaboration with ASSAf can deliver when addressing developmental and societal challenges, ASSAf will promote the success of the DDM (District Development Model) regarding service delivery issues.
- The ASSAf Act speaks to "all people" and clearly advocates for integration between disciplines, developing the intellectual capacity of all South Africans and ensuring that science service is inclusive. Rural communities, the poor, unemployed youth,

uneducated people, and those who are not digitally connected are priority in transforming science service.

- ASSAf must play a role in preparing society for change and promote solutions to solve societal challenges identified. It should identify strategies to convince the public of the value of science through partnering with NGO's, civil society, and organised labour. By initiating dialogues with intermediaries and leadership in local communities, or existing networks and platforms that are dealing with pressing issues, opportunities can in turn be created to engage in conversation with communities to – through adaptive responses - prepare for the world we are facing.
- ASSAf should revisit the way it communicates and engages with the various stakeholders. It is suggested that concise, succinct summary reports be written to accompany each evidence-based/consensus study with links to chapters in full when submitting it to funders and decision makers.
- ASSAf research outputs should be disseminated in a strategic way, and an ASSAf Communication Strategy should address this issue. The Academy should make use of additional communication products and channels to promote science and the uptake thereof towards developing a scientifically informed and literate society. Suggestions – of which some have been implemented already: bulletins (when important issues arise, ASSAf should consider broadcasting an alert by sending a bulletin to stakeholders), social media (Twitter, Facebook, LinkedIn, Instagram) including short video clips/TikTok video clips, live streams of activities through the ASSAf YouTube Channel/ASSAf Facebook, podcasts, etc.
- More statements should be issued by ASSAf on matters of relevance to all of society, and ASSAf should demonstrate its power/influence through these statements. Keep it short and sharp to reach the relevant people. Activities that can further be used to engage all publics include public debates, roundtables, seminars on topical matters, webinars, lectures, forums, publications, reports, etc.
- ASSAf should start collecting information on all its publics in a unified way to start building a database to assist in monitoring and evaluations going forward.

## 8.5 Visibility and Impact

In keeping with its theory of change vision described earlier, ASSAf will create awareness of its activities by profiling activities linked to its five pillars: science for education, science for society, science for policy, science for business and science for science (**Appendix A**, p. 25).

### **Strategic Pillar: Science for Education**

The focus of projects and activities in this category will be on learners in school and higher education systems (especially Grades 10 to 12), as well as sections of society considered to have an influence on young people. The intention is to encourage young people's participation in science and contribute to efforts to achieve the National Development Plan's (Vision 2030) target of increasing the number of students eligible to study towards mathematics and science-based degrees to 450 000 by 2030 – necessary for the development of skills required by the knowledge-based economy. This in collaboration with other stakeholders. The proposed projects/activities and its accompanying interventions will be aligned with the DSI/SAASTA Science Engagement Strategy Implementation Plan, and strong collaboration is envisaged (**Appendix D**, p. 28).

## **Strategic Pillars: Science for Society; Science for Policy**

By creating an enabling environment for dialogue to take place among scientists, and between scientists and the non-scientific community, ordinary citizens will have access to scientific research, and opportunities to influence the selection of research priorities. As a general guideline, the determination of dialogue topics will be informed by proposals or recommendations from stakeholders (including academia, industry, government, and society), United Nations thematic days/years, natural phenomena that need to be studied by scientists and government policy considerations involving the possible use of technologies that could affect society and the environment (**Appendix E**, p. 30).

## **Strategic Pillars: Science for Business, Science for Education, Science for Science**

Science communication should be developed as a domain and structured in a way that contributes to the attainment of a society that is knowledgeable about science, scientifically literate and critically engaged in science-related matters. This goal can potentially be achieved by the projects identified as part of **Appendix F** (p. 32).

### **Strategic Pillar: Science for Science**

Local scientific and technological advancements will be profiled to enhance South Africans' appreciation of the value of science, to lobby for public support for the government's continuous investment in science, technology and innovation, and to allow the public to hold government accountable for using science for the public good. ASSAf will support popularising instruments that government, in particular the DSI, has put in place to enable research, development and innovation (RDI) in the country (**Appendix G**, p. 33).

#### 8.5.1 Improving societal awareness on ASSAf and STI

- ASSAf will consider more public campaigns to expand the ASSAf footprint. This includes advertising campaigns through social media and Google, as well as roadshows.
- ASSAf will reach out to all stakeholders in the NSI and beyond (all publics). It will publicise itself more prominently regarding its responsibilities, work and value to society.
- ASSAf will be more proactive instead of reactive and will move with greater urgency and speed to produce advice. It will maintain a balance between excellence and speed. This has been a challenge in the past since Members were not prepared to make public statements or talk to the media without having evidence.
- ASSAf will keep abreast and well informed on thematic science news and create awareness among all publics.
- ASSAf will focus on building relationships with community media to spread awareness of science-related matters among the public.

#### 8.5.2 Profiling the ASSAf Brand

- ASSAf affiliation is seldom used by ASSAf Members. Members will be encouraged to wear their ASSAf Membership status with pride, include it in their biographies, email signatures, when interviewed by the media and more. This will be considered a

requirement as part of the ASSAf declaration which is signed when new Members are inaugurated.

- ASSAf has a reputation of trust and ethical conduct and is ideally positioned to address matters of national and international importance. It represents the voice of eminent scientists in our country using a scientific and evidence-based approach to combat fake science.
- ASSAf is mostly visible to the science sector and less so to the public sector. There is also no direct evidence that “society has been served.” The impact of science conducted by ASSAf will be measured and evaluated, and decisions and strategy will be informed by these measurements and evaluations. This is also to justify ASSAf’s existence.
- The Academy will focus more on understanding the impact of science. When measuring impact ASSAf will attempt to measure the difference it makes to the lives of ordinary South African citizens (all publics).
- Registration and evaluation forms measuring the impact of ASSAf activities will be standardised.
- According to the ASSAf Institutional Review Report 2022, ASSAf does a very good job of being scholarly but loses out when trying to present their material so that the average person can understand the value of the information they are presenting. Alternative formats will be implemented.
- Also, according to this report, there is concern that there is insufficient uptake of recommendations from the ASSAf evidence-based/consensus studies. ASSAf will increase its efforts to bring research findings to the attention of decision- and policymakers.

### 8.5.3 Capacity Building regarding Science Engagement and Communication

- The ASSAf Secretariat will be trained in the understanding of what science engagement and communication entails as well as how to engage as a unit rather than in silos within the organisational structure.
- The Academy will provide science communication and media engagement training to Members to prepare them for public interviews on topics of interest to society.
- Expanding the ASSAf footprint and advancing science engagement and communication will require a dedicated Science Engagement portfolio. This portfolio will be established.
- The ASSAf Membership will be encouraged to engage with the various publics. There will be credit for activities to make science more accessible to the general public, e.g. as part of Continuous Professional Development (CPD).
- ASSAf’s budget evaluation will include how funds can be allocated to execute this strategy. Furthermore, ASSAf will work with other publics and consider collaboration and sharing resources in the promotion of science.

### 8.5.4 Profiling ASSAf Members

- ASSAf will promote public profiles of its Members as role models for future generations – also through SAYAS, scientists interviewing one another and more. This is to inspire our youth to follow careers in science, to build trust in science and to support our scientists and the work they do.



- ASSAf will focus on profiling young women scientists and black scientists, as well as scientists from lesser-known disciplines, where skills are in short supply.
- More awareness will be created around the African Scientists Directory<sup>19</sup> to achieve the above. This Directory is accessible to all publics globally to benefit from.
- Although ASSAf lists its Members on the ASSAf website, the data contained in the database itself is not sufficiently granular. A differently structured Membership database with powerful search capabilities, and Member profiles linked to the African Scientists Directory, will be implemented.
- ASSAf will implement a database of all items appearing in the media.

## 8.6 Monitoring and Evaluation

The Human Science Research Council (HSRC) is integral to the monitoring and evaluation endeavours that accompany the implementation of the DSI's science engagement programmes.

Also refer to the *Science Engagement Strategy Implementation Plan*<sup>20</sup> and the *Science Engagement Monitoring and Evaluation Framework*<sup>21</sup>.

A Monitoring and Evaluation (M&E) Framework adapted from that which already exists for ASSAf will be implemented to monitor progress. Data will be submitted for inclusion in the SAASTA managed *Science Engagement Information Management System (SEIMS)*.

Targets will be set at the beginning of each financial year, guided by ASSAf's Annual Performance Plan. Reporting will be the responsibility of each programme's manager through their respective staff Members to ensure integration across the whole of ASSAf.

The quarterly and annual reports submitted to Council, DSI and Parliament will capture the science engagement indicators after the end of the quarter and the financial year, respectively.

<sup>19</sup> <https://africanscientists.africa/>

<sup>20</sup> <https://www.saasta.ac.za/saasta/wp/wp-content/uploads/2018/03/Science-Engagement-Strategy-Implementation-Plan-Approved.pdf>

<sup>21</sup>

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## Section D

### 9. Delivery of the Strategy

#### 9.1 Governance

ASSAf organises its activities in three broad groupings, namely, Members, Council, and the Secretariat. ASSAf Membership currently brings together 658 Members to provide science advice to government and other stakeholders on critical issues, such as poverty, sustainable development, climate change, biotechnology, and health among other topics. The Academy Membership does not have a cap on numbers and, therefore, new Members are elected annually.

The Academy is headed by the ASSAf Council. The ASSAf Council comprises 12 Members elected by the Membership and a 13th Member appointed by the Minister of Science and Technology as a representative of the National Advisory Council on Innovation (NACI). The Council is led by a President and supported by an Executive Committee that comprises two Vice Presidents, a General Secretary, and a Treasurer.

ASSAf has a well-established Secretariat that serves the Council and Members of the Academy.

The Secretariat currently employs thirty staff Members led by the Executive Officer (EO). They are the implementing arm of the Academy who oversee the operational activities of ASSAf. In some activities, the Secretariat works with the Standing Committees that are represented by selected Members and other experts who conduct evidence-based/consensus studies, and host webinars and other activities that promote their mandates.

The Secretariat works closely with SAYAS and women in science organisations. Working together, the goal is to promote an organisational culture that is respectful of diversity, values diversity and promotes inclusiveness that encompasses people with disabilities.

The Academy subscribes to the need to apply Broad-Based Black Economic Empowerment (B-BBEE) principles in its procurement processes and submits annual employment equity reports to the Department of Labour. Diversity in the Membership of ASSAf's various study panels and Standing Committees must be considered when such panels and committees are established. This is regarded as a key intervention to profile scholars/researchers and to position them for possible nomination and subsequent election to ASSAf Membership.

All stakeholders in ASSAf will be involved in the implementation of this Science Engagement Strategy by ensuring that actions proposed under each objective are undertaken. Orientation on the Strategy, its implementation, monitoring and evaluation will be part and parcel of the Academy's operations.

The execution of this Strategy is the responsibility of the Academy in its entirety with the Executive and Council playing a key decision-making role. It is recommended that a dedicated, innovative, and knowledgeable individual takes responsibility to oversee and

coordinate science engagement events/activities/publications at ASSAf. This person should report to an ASSAf Manager.

## 9.2 Budget, funding, and staffing

All ASSAf staff from the three ASSAf programmes: SAPSP, SPP and Governance collectively and actively advance the engagement of various publics in science.

ASSAf undertakes to:

- Dedicate a budget from baseline funding for science engagement activities.
- Develop and implement a dynamic fundraising mechanism.
- Build sustainable relationships with potential donors.
- Ensure that science engagement forms part of the responsibilities of a senior staff Member who will ensure that this SES is implemented at all levels of ASSAf's operational activities.
- Through managers the Academy will encourage senior staff responsible for different programmes to participate in the implementation of the strategy.

This Strategy will be incorporated into the existing monitoring and evaluation framework of the Academy as part of the operations and activities of ASSAf.

**ASSAf fundamental strategic pillars, with their associated publics and possible stakeholders**

	<b>Strategic Pillars</b>	<b>Public/s</b>	<b>Stakeholders</b>
<b>Science for Society</b>	Science for science (advancing STI)	Scientists, Researchers and Students	ASSAf Members, Academies of Science (incl. NASAC, IAP, TWAS), Higher Education Institutions, Research Entities (incl. ISC), DSI Entities (incl. NRF, SAASTA, NACI, TIA), Science Councils (incl. HSRC, CSIR, MRC, ARC)
	Science for policy (and diplomacy) (guiding policymakers and practitioners)	Decision-makers	Government Departments, DSI Entities (incl. NRF, SAASTA, NACI), Science Councils (incl. HSRC, CSIR, MRC, ARC), Members of Parliament, Members of the Portfolio Committee on Science and Technology, Policymakers, Traditional Leaders, and Embassies
	Science for society (responsiveness to society's needs – literacy, awareness, communication)	Science Interpreters, Journalists, Tourists, Indigenous Knowledge Holders, and General Public	General public, Museums (Ditsong Museums of South Africa), and Libraries (LIASA)
	Science for business (partnerships)	Industry	Industry, NGOs, NPOs, Members of Professional Bodies
	Science for education (science literacy)	Learners, Educators, Students, General Public, Tourists	Network of Science Centres, Schools, Museums, Libraries, Mathematics and Science Educators, South African Research Chairs Initiative (SARChI), Department of Basic Education (DBE), Teachers, and Learners



## Appendix B

### Publics reached as part of Science Engagement and Communication

Public	Description	Examples of Engagement ASSAf Events/Activities & Publications
<b>Learners</b>	All South African (SA) schools with a focus on Grades 9 to 11 learners	Events: National Science Week (NSW), SciFest Africa Publications: <i>Quest: Science for South Africa</i> magazine and website, Quest Mailing List
<b>Educators</b>	All Educators, School Organisations, School Principal Meetings, Teachers' Unions and Network of Science Centres in South Africa	Events: NSW, SciFest Africa Publications: <i>Quest: Science for South Africa</i> magazine and website Quest Mailing List
<b>Industry</b>	NGO's, NPO's, Private Businesses, Embassies (e.g. Falling Walls)	Activity: Science Engagement Community of Practice Mailing List, Embassy Lectures, Science-Business Leadership Forum
<b>Scientists and Researchers (National &amp; International) (incl. ASSAf Members)</b>	Including Academy, Editors & Journal Managers, ASSAf Members, SAYAS Members, Visiting Scientists, Science Academies (SADC, NASAC, IAP, TWAS), Professional Bodies/Societies, Science Councils (ISC, HSRC, CSIR, MRC, ARC), WISET, etc	Publications: <i>South African Journal of Science (SAJS)</i> , SciELO SA (including Khulisa) Journals, Journal Peer Review Panels evidence-based studies, Thematic evidence-based studies, African Scientists Directory (ASD), Proceedings Reports Activities: National Scholarly Editors Forum (NSEF), Presidential Roundtables
<b>Science Interpreters</b>	Science Engagement Community	Science Engagement Community of Practice Mailing List; Quest distribution list, SAJS distribution lists
<b>Decision-makers</b>	Including Policymakers, Government, Gov Departments (including DHET, DSI (NRF SAASTA, NACI)), Legislators	OWSD, GenderInSite
<b>Journalists</b>	Book and Journal Publishers, Media (incl. newspapers, bloggers, videographers etc), Editors	National Scholarly Editors Forum (NSEF), National Scholarly Book Publishers Forum (NSBPF), Science Journalists Science Engagement Community of Practice Mailing List
<b>General Public</b>	Museums, Libraries, General Public	LIASA, Ditsong Museums of South Africa
<b>Students (Masters &amp; Doctoral)</b>	HEIs	Lindau Nobel Laureate Meeting
<b>Tourists</b>	All	Science tourism
<b>Indigenous Knowledge Holders</b>	All	

## Appendix C

### Alignment of ASSAf Events/Activities/Publications with the UN SDGs

Sustainable Development Goal (SDG)	Items in ASSAf Research Repository
SDG 1: End poverty in all its forms everywhere	18
SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	20
SDG 3: Ensure healthy lives and promote well-being for all at all ages	54
SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	34
SDG 5: Achieve gender equality and empower all women and girls	13
SDG 6: Ensure availability and sustainable management of water and sanitation for all	19
*SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all	15
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	38
*SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation	42
SDG 10: Reduce inequality within and among countries	35
SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable	29
SDG 12: Ensure sustainable consumption and production patterns	16
*SDG 13: Take urgent action to combat climate change and its impacts	28
SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	6
SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss	16
SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	34
SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development	13

*\*SDGs be taken forward as major strategic areas for the Academy*

## Appendix D

### Popularising science, engineering, technology and innovation as attractive, relevant and accessible – proposed projects/activities/interventions

Project/Activity	Proposed Interventions
Science Career Awareness	<ul style="list-style-type: none"> <li>Establish partnerships and collaboration with the network of science centres (35) and increase collaboration.</li> <li>ASSAf – through its Members and other networks - to provide career advice, career planning and career information. Products that increase the awareness of careers in science can be developed in collaboration with ASSAf stakeholders.</li> <li>Continue utilising the <i>Quest Science for Society</i> magazine to provide guidance on careers in science. See the “How to get ahead during and after school” series.</li> <li>Create a science career section on the <i>Quest</i> website. Populate it with information on possible careers in science and career planning tools.</li> <li>Reference and create awareness of the existing DSI/SAASTA science career publication/booklet <sup>22</sup>.</li> <li>Actively engage in career fairs/festivals hosted by DSI-led science engagement initiatives such as the annual National Science Week (First week in August).</li> <li>Create awareness and support faculty career days and open days by Higher Education Institutions.</li> <li>Create opportunities for learners/students to engage with science professionals, thereby providing role models for the youth. ASSAf Members, SAYAS Members and Members of SACNASP can play a key role in this regard.</li> </ul>
School-based Science Engagement Initiatives	<ul style="list-style-type: none"> <li>Establish partnerships with provincial departments of education.</li> <li>Link interventions to the Department of Basic Education's National Strategy for Mathematics, Science and Technology.</li> <li>Support SAASTA and collaborate in after-school science club (ASSC) activities.</li> <li>Involve SACNASP and SAYAS Members to mentor and nurture learners' problem-solving skills through participation in science Olympiads and competitions, roadshows.</li> <li>Stimulate scientific research curiosity in learners using programmes such as the <i>Global Learning and Observations to Benefit the Environment</i> <sup>23</sup>. Develop a web page (as part of the <i>Quest</i> <sup>24</sup> website) containing lists to similar programmes.</li> <li>Train learners in science communication and involve them in science debates. Support the SAASTA debate competition.</li> <li>Encourage learners to reap the full benefits of their ideas/inventions through exposing them to the innovation value chain, intellectual property protection and intellectual property rights.</li> </ul>
Science Activities for Children	<ul style="list-style-type: none"> <li>Host science competitions e.g. to create awareness of the importance of the basic sciences (mathematics, biology, chemistry, physics) in achieving the 17 UN SDGs as part of the International Year of Basic Sciences for Sustainable Development.</li> <li>Create awareness of the many exciting science programmes hosted by science centres nationally.</li> </ul>
Popularise human capital and research capacity development interventions	<ul style="list-style-type: none"> <li>Participate in campaigns targeting undergraduate students and graduates participating in work preparation programmes across government, entities and industry.</li> <li>Create awareness of bursaries and scholarships offered by the NRF.</li> <li>Create awareness of publicly funded research programmes established to develop the country's research and innovation</li> </ul>

<sup>22</sup> Science, Engineering & Technology Careers [https://www.saasta.ac.za/saasta\\_wp/wp-content/uploads/2020/08/SET-Pub2-updated-2020-vs2.pdf](https://www.saasta.ac.za/saasta_wp/wp-content/uploads/2020/08/SET-Pub2-updated-2020-vs2.pdf)

<sup>23</sup> <https://www.globe.gov/>

<sup>24</sup> <https://questonline.org.za/>

ASSAf Science Engagement Strategy 31 October 2023 - Approved and endorsed by Council 7 February 2024

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	<p>capacity, e.g. SARChI, Centres of Excellence.</p> <ul style="list-style-type: none"> <li>• Expose students to the innovation value chain, the development of ideas from concept to commercialisation, intellectual property protection and intellectual property rights. Collaborate with TIA and NIPMO.</li> <li>• Reach students through university open days, NSW, and special orientation sessions for graduates participating in work preparation programmes, student associations (e.g. Postgraduate Students Associations and Conferences).</li> <li>• ASSAf (SAYAS) to continue to be the nominating partner and coordinator for South Africa to the Lindau Nobel Laureate Meetings, acting on behalf of the DSI.</li> <li>• ASSAf (SAYAS) to continue participation in the Annual Young Scientist Conference.</li> <li>• Training and mentorship to be provided by OWSD and TWAS-SAREP as part of many events hosted by these two organisations.</li> </ul>
Advocating for school curriculum to include information literacy as part of the school curriculum	<ul style="list-style-type: none"> <li>• Learners – from an early age – need to understand the research process. ASSAf will engage with various stakeholders to see how information literacy can be integrated into the school curriculum. This might form part of the Life Orientation Programme.</li> </ul>
Public Participation Programmes	<ul style="list-style-type: none"> <li>• Support ministerial izimbizo's (public meetings between the Minister of Science, Technology and Innovation and the public). Engage in exhibits, experiments and related activities.</li> </ul>



## Appendix E

### Developing a critical public that actively engages and participates in the national discourse of science and technology – proposed projects/activities/interventions

Project/Activity	Proposed Interventions
Citizen-centred dialogue platforms	<ul style="list-style-type: none"> <li>Use social and recreational spaces for public engagement with science. Physical social and recreational spaces can potentially include Science Cafés, Science &amp; Cocktails (Orbit Jaxx Club, Johannesburg), Town Hall Meetings (in collaboration with district and metropolitan municipalities), and many more. Theatre productions integrating the arts and sciences are becoming increasingly popular. Virtual social and recreational spaces can potentially include the many social media platforms available, including TikTok.</li> </ul>
Public engagement a condition of research grant awards	<ul style="list-style-type: none"> <li>Although ASSAf is not a funder as such, any engagement with ASSAf can in the future potentially require a condition that the public should benefit from a specific event/activity/publication. This is similar to future NRF grants which will make it mandatory for recipient individuals and organisations to engage with the public on their research. This can be done through social media, radio interviews and popular science magazines, but also during conferences, public lectures, seminars and more.</li> <li>ASSAf platforms that can be utilised to engage the public include for example: Special Public Lectures (e.g. ASSAf Presidential Roundtables, Annual Humanities, Royal Society, Distinguished Visiting Scholar and Embassy Lectures), webinars, workshops/conferences/symposiums/dialogues, <i>Quest</i> Science Outreach Activities (National Science Week, SciFest Africa, etc), Fora (e.g. NSEF, NSBPF, Science Business-Leadership Forum), Innovation for Inclusive Development (IID) Seminars, Innovation Bridge Science Forum South Africa Events, Awards and new Members events.</li> </ul>
Incorporating science engagement outreach into continuing professional development for scientists	<ul style="list-style-type: none"> <li>ASSAf utilises the SACNASP Continuing Professional Development (CPD) system to acknowledge participation in ASSAf initiatives. Credits can also be claimed in the area of public engagement in science (to be implemented). The other areas for which scientists can claim CPDs include Developmental Activities, Work-based Activities and Mentoring, and Individual Activities and Voluntary Association Membership.</li> </ul>
Taking science to decision-makers	<ul style="list-style-type: none"> <li>ASSAf will develop policymaking booklets to accompany each evidence-based/consensus study with links to complete chapters, when submitting these studies to the government and other decision makers (incl. funders). These can also be presented during PAP and SADC meetings. Research conducted should be transferred to all three layers of government (national, provincial, municipal).</li> </ul>
Science Forum South Africa	<ul style="list-style-type: none"> <li>ASSAf to continue submitting session proposals as part of future SFSA's. This platform is the perfect opportunity to create vibrant debate on the role of science in society in SA and is attended by Members of all publics (see <i>Figure 1</i>).</li> </ul>
Science Engagement Conferences	<ul style="list-style-type: none"> <li>ASSAf to actively engage in the following: <ul style="list-style-type: none"> <li>SAASTA Automatically Supported Conferences (Annual Conference of the Southern African Association of Science and Technology Centres, Annual Science, Technology, Engineering and Mathematics (STEMI) Olympiads and Competitions Community of Practice Conference, Public engagement with science conference (HSRC))</li> <li>Ad Hoc Conferences</li> </ul> </li> </ul>
Online Public Social Sciences Initiative	<ul style="list-style-type: none"> <li>ASSAf will be participating in the SAASTA online resource initiative to establish a network of connection between higher education institutions, science councils, cooperatives and local communities (incl. schools). Issues relating to active citizenship, public</li> </ul>

	<p>engagement and the contribution of the social sciences to civil society may be debated beyond strictly academic circles, and where opportunities for future collaborations may be sought.</p>
Public Seminar and Lecture Series	<ul style="list-style-type: none"> <li>Existing ASSAf seminar and lecture series will be retained, enhanced, and expanded: Special Public Lectures (e.g. ASSAf Presidential Roundtables, Annual Humanities, Royal Society, Distinguished Visiting Scholar and Embassy Lectures), webinars, workshops/conferences/symposiums/dialogues, Quest Science Outreach Activities (National Science Week, SciFest Africa, etc), Fora (e.g. NSEF, NSBPF, Science Business-Leadership Forum), Innovation for Inclusive Development (IID) Seminars, Innovation Bridge Science Forum South Africa Events, Awards &amp; new Members events.</li> <li>ASSAf will further support existing seminars and lectures by the NRF, HSRC, and other science entities.</li> </ul>
Proactive and Reactive Agenda Setting	<ul style="list-style-type: none"> <li>ASSAf will align with the SAASTA information gathering system which will enable both <ul style="list-style-type: none"> <li>Proactive engagement with science (surveillance of global science issues to establish megatrends in the science space which could affect people/environment, and where necessary public engagement activities will be pursued to enable South Africans to gain the necessary knowledge and awareness of such matters).</li> <li>Reactive engagement with science (improvement of service delivery by government)</li> </ul> </li> </ul>
Science Shop	<ul style="list-style-type: none"> <li>ASSAf – through its evidence-based/consensus studies – provides independent advice to especially government. Science Shops (or Workshops) should also be considered to allow participation by the different publics in response to problems faced by specific communities. ASSAf should consider partnering with universities in hosting these science shops.</li> </ul>

## Appendix F

### Promoting science communication that will enhance science engagement in South Africa – proposed projects/activities/interventions

Project/Activity	Proposed Interventions
Development of Science Communication Skills	<ul style="list-style-type: none"> <li>• ASSAf will support and collaborate on the development of science communication skills on three levels:               <ul style="list-style-type: none"> <li>○ Basic Science Communication Skills (scientists, researchers, science interpreters, educators, journalists, students, learners). Capacity building/training to be provided by the University of Limpopo.</li> <li>○ Science Communication Research Skills (training on graduate and postgraduate level by Rhodes University and Stellenbosch University).</li> <li>○ Science Journalism Internship (e.g. through SANEf).</li> </ul> </li> <li>• ASSAf will also engage in Science Diplomacy Training.</li> <li>• Collaborate with Jive Media to provide media engagement and science communication training to scientists and researchers.</li> </ul>
Interfacing Corporate Communication with Science Communication	<ul style="list-style-type: none"> <li>• A Corporate Communication Strategy and brand revitalisation is in the pipeline for ASSAf. This strategy will strengthen ASSAf's position in the science environment and ensure that the brand and brand values become entrenched.</li> </ul>
Promoting Science Communication through Competitions	<ul style="list-style-type: none"> <li>• ASSAf will continue to support existing science competitions (Science Slam, FameLab) and will also consider hosting its own competitions e.g. IYBSSD School Competition.</li> </ul>
Positioning Media as a Science Engagement and Dialogue Platform	<ul style="list-style-type: none"> <li>• ASSAf will continue to engage different publics through the following:               <ul style="list-style-type: none"> <li>○ Scholarly Journals: South African Journal of Science, SciELO SA, Khulisa Journals.</li> <li>○ Popular Science Magazine: <i>Quest Science for South Africa</i></li> <li>○ Popular Media: Statements, Policy Briefs, Interviews, Press Releases</li> <li>○ Consensus/evidence-based studies</li> <li>○ Open Access ASSAf Research Repository, containing full open records of all ASSAf events/activities and publications</li> <li>○ Social Media to be increasingly utilised by ASSAf: Mailing Lists emails/announcements (incl. ASSAf Newsletter), Twitter posts, Facebook posts, LinkedIn posts, Instagram posts, TikTok posts, YouTube videos, Google AdSense campaigns, Radio Interviews, Blog/ Media Articles</li> </ul> </li> <li>• ASSAf will be considering utilising the following to engage all publics in science: TV, print media (magazines, newspapers), Micro-enterprise Media Engine (MEME), etc.</li> <li>• ASSAf will embark on building relationships with national, provincial and community media houses in the 2023/24 financial year.</li> </ul>

## Appendix G

### Profiling South African science and science achievements domestically and internationally, demonstrating their contribution to national development and global science, thereby enhancing their public standing – proposed projects/activities/interventions

Project/Activity	Proposed Interventions
Establishment of a web portal for published papers	<ul style="list-style-type: none"> <li>In addition to its own fully indexed and open access institutional research repository, ASSAf will continue to support the implementation of federated harvesters and institutional repositories (e.g. planned NRF web portal containing published science papers) established at science entities and institutes of higher education, to increase access, visibility and the impact of research.</li> </ul>
Development and deployment of complementary learning and teaching support materials.	<ul style="list-style-type: none"> <li>ASSAf will mobilise its Members to contribute science material for learning and teaching support to the DSI LTSM (Learning and Teaching Support Materials).</li> </ul>
Sustaining sector-specific science engagement initiatives	<ul style="list-style-type: none"> <li>ASSAf will continue to raise awareness of the DSI priority areas.</li> <li>Existing initiatives will be revisited to ensure their alignment with the SES.</li> <li>Additional science engagement initiatives will be initiated in outstanding priority areas.</li> </ul>
Exhibitions of South African inventions, innovations and discoveries	<ul style="list-style-type: none"> <li>ASSAf will support both DSI travelling and virtual exhibitions.</li> </ul>
Raising awareness of RDI-enabling instruments	<ul style="list-style-type: none"> <li>RDI-enabling instruments will be publicised to increase awareness of the nature of investments the government makes in science, also through ASSAf.</li> </ul>
Showcasing success stories from publicly funded research	<ul style="list-style-type: none"> <li>ASSAf links to the DSI Innovation Bridge through its African Scientists Directory and will support its Innovation Bridge Technology Showcase and Matchmaking event.</li> </ul>
Science Tourism	<ul style="list-style-type: none"> <li>ASSAf will support creating awareness of science attractions in our country, as well as visitation of science centres.</li> </ul>
Recognition of Scientists	<ul style="list-style-type: none"> <li>ASSAf maintains a directory with eminent scientists on the continent (African Scientists Directory)</li> <li>Eminent South African scientists are further acknowledged through the following prestigious grants/awards:               <ul style="list-style-type: none"> <li>SAYAS Grants &amp; Funding</li> <li>TWAS-SAREP Awards &amp; Funding</li> <li>ASSAf Humanities Book Award</li> <li>ASSAf Science-for-Society Gold Medals</li> <li>ASSAf Gold Medal for Outstanding Meritorious Service</li> <li>AU-TWAS Prize for Young Scientists in South Africa</li> </ul> </li> </ul>