

ANNUAL | REPORT

2017 | 2018



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



Academy of Science of South Africa
August 2018

ISBN 978-0-9947117-9-3

DOI <http://dx.doi.org/10.17159/assaf.2018/0024>

Published by:
Academy of Science of South Africa (ASSAf)
PO Box 72135, Lynnwood Ridge, Pretoria, South Africa, 0040
Tel: +27 12 349 6600 Fax: +27 86 576 9520
E-mail: admin@assaf.org.za

Reproduction is permitted, provided the source and publisher are appropriately acknowledged.

The Academy of Science of South Africa (ASSAf) was inaugurated in May 1996. It was formed in response to the need for an Academy of Science consonant with the dawn of democracy in South Africa: activist in its mission of using science and scholarship for the benefit of society, with a mandate encompassing all scholarly disciplines that use an open-minded and evidence-based approach to build knowledge. ASSAf thus adopted in its name the term 'science' in the singular as reflecting a common way of enquiring rather than an aggregation of different disciplines. Its Members are elected on the basis of a combination of two principal criteria, academic excellence and significant contributions to society.

The Parliament of South Africa passed the Academy of Science of South Africa Act (No 67 of 2001), which came into force on 15 May 2002. This made ASSAf the only academy of science in South Africa officially recognised by government and representing the country in the international community of science academies and elsewhere.

ANNUAL | REPORT

2017 | 2018



CONTENTS

3	Abbreviations & Acronyms
5	List of Tables
7	Message from the President
10	Umyalezo ovela kuMongameli
15	Message from the Executive Officer

PART A: STRATEGIC OVERVIEW

19	1	Vision
19	2	Mission
19	3	Values
20	4	Legislative and Other Mandates
20	4.1	The Academy of Science of South Africa Act (No 67 of 2001)
20	4.2	Science and Technology Laws Amendment Acts (No 16 of 2011 and No 7 of 2014)
20	5	Organisational Structure
20	6	Council
21	6.1	Council Composition
25	6.2	Council Meeting Attendance

PART B: PERFORMANCE INFORMATION

27	1	Overview
27	1.1	Service Delivery Environment
27	1.2	Alignment with Government Policies
29	1.3	Significant Developments/Major Projects
30	1.4	Service Delivery Improvement Plan
30	1.5	Strategic Outcome-oriented Goals
32	2	Performance Information by Programme
32	2.1	Programme 1: Governance and Administration
32	2.1.1	Governance
32	2.1.2	Finance and Risk
33	2.1.3	Human Resources
33	2.1.4	Knowledge Management
33	2.1.5	Communication
35	2.2	Programme 2: Scholarly Publishing Programme
35	2.2.1	Open Science
38	2.2.2	Quality Assurance

39	2.2.3 Research Publishing
39	2.2.4 South African Journal of Science
40	2.2.5 Quest: Science for South Africa
41	2.3 Programme 3: Liaison Programme
42	2.3.1 Member Liaison
45	2.3.2 National Liaison
47	2.3.3 International Liaison
49	2.3.4 Overseas Collaborations
51	2.3.5 African Collaborations
53	2.3.6 Young Scientists' Activities
54	2.3.7 Gender and STI Activities
58	2.4 Programme 4: Science Advisory Programme
58	2.4.1 Health Studies
59	2.4.2 Education Studies
60	2.4.3 Poverty Reduction Studies
60	2.4.4 Humanities Studies
61	2.4.5 Biosafety and Biosecurity Studies
61	2.4.6 Climate Change and Energy Studies
62	3 South African Young Academy of Science
62	3.1 Introduction
63	3.2 New SAYAS Members Inaugurated
63	3.3 SAYAS General Assembly
63	3.4 ASSAf Young Scientists' Conference
63	3.5 Science Engagement and Outreach Programme
64	3.6 OWDS-SANC, SAYAS and DUT Co-host Research in SITE
64	3.7 SAYAS at DST Youth Indaba
64	3.8 SAYAS at NET Africa Science Week
65	3.9 3 rd Worldwide Meeting of NYAs
65	3.10 SAYAS at Science Forum South Africa 2017

65	4	South African Academy of Engineering
66	4.1	National Activities
67	4.2	International Activities
69	5	International Council for Science Regional Office for Africa
69	5.1	Governance
69	5.1.1	Personnel
69	5.2	Scientific Activities
69	5.2.1	Publications
69	5.2.2	Events Organised
71	5.2.3	Events Attended

PART C: FINANCIAL INFORMATION

76	General Information
77	Council's Responsibilities and Approval
78	Audit and Risk Committee Report
80	Independent Auditor's Report to Parliament on the Academy of Science of South Africa
84	Council's Report
85	Statement of Financial Position
87	Statement of Changes in Net Assets
87	Cash Flow Statement
88	Statement of Comparison of Budget and Actual Amounts
89	Accounting Policies
99	Notes to the Annual Financial Statements

LIST OF TABLES

35	Table 1: Programme 1: Performance Indicators for the 2017/18 Financial Year
41	Table 2: Programme 2: Performance Indicators for the 2017/18 Financial Year
57	Table 3: Programme 3: Performance Indicators for the 2017/18 Financial Year
62	Table 4: Programme 4: Performance Indicators for the 2017/18 Financial Year

Abbreviations Acronyms

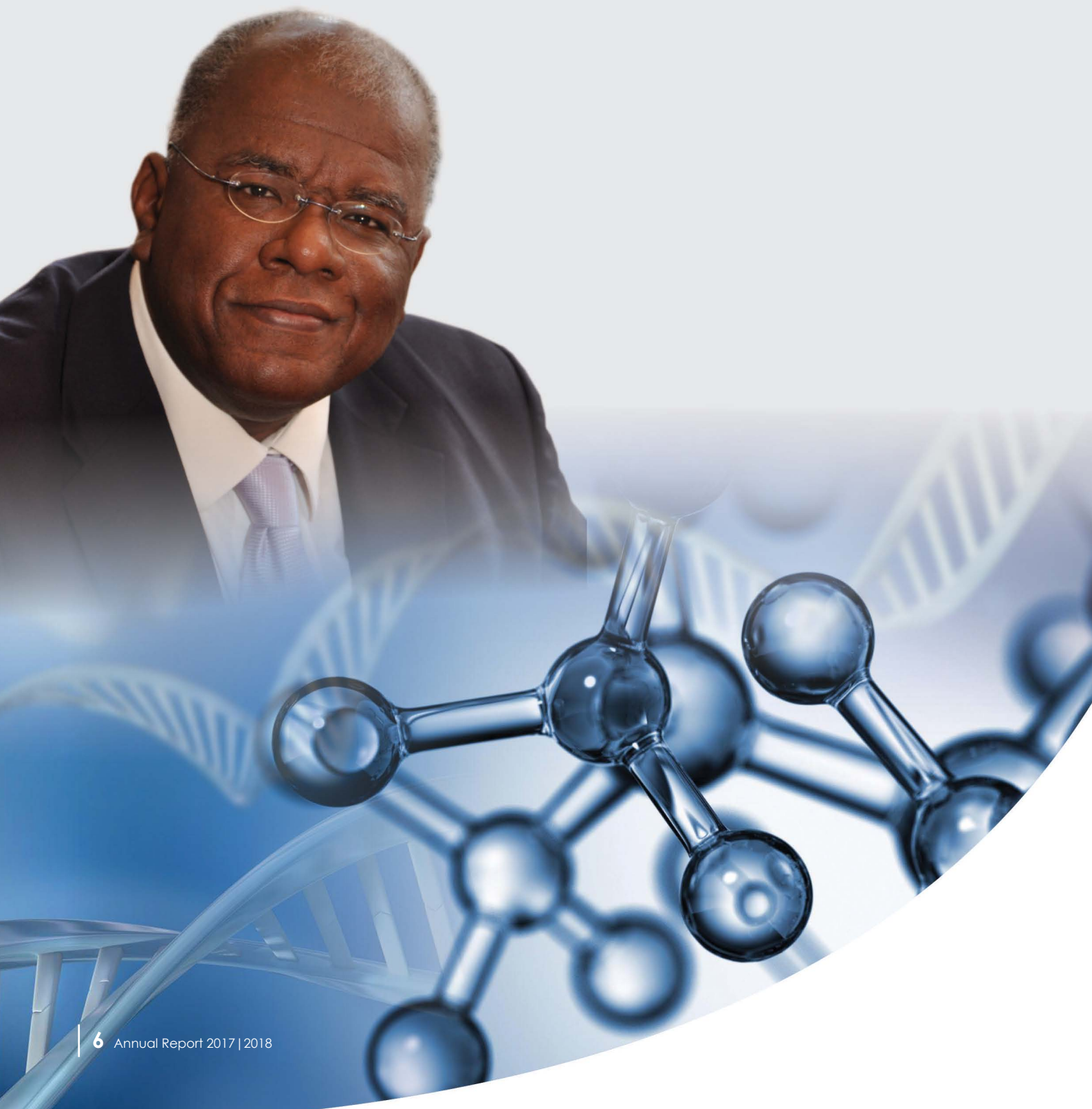


AAAS	American Association for the Advancement of Science
AAU	Association of African Universities
AET	Agricultural Education and Training
AIMS	African Institute for Mathematical Sciences
AMASA	Annual Meeting of African Science Academies
AOSP	African Open Science Platform
APP	Annual Performance Plan
ARC	Agricultural Research Council
ASLP	Africa Science Leadership Programme
ASSAf	Academy of Science of South Africa
AU	African Union
AWARD	African Women in Agricultural Research and Development
BRICS	Brazil, Russia, India, China, South Africa
CAE	Chinese Academy of Engineering
CAETS	Council of Academies of Engineering and Technological Sciences
CAPRISA	Centre for the AIDS Programme of Research in South Africa
CEO	Chief Executive Officer
COHORT	Committee of Heads of Organisations for Research and Technology
CSPiSA	Committee on Scholarly Publishing in South Africa
CSIR	Council for Scientific and Industrial Research
DHET	Department of Higher Education and Training
DOAJ	Directory of Open Access Journals
DST	Department of Science and Technology
DUT	Durban of University of Technology
DVC	Deputy Vice-Chancellor
DVS	Distinguished Visiting Scholar
ESASTAP	Strengthening of Technology, Research and Innovation between Europe and South Africa
EU	European Union
GCGC	Global Change Grand Challenge
GenderInSITE	Gender in Science, Innovation, Technology and Engineering
GM	Genetic modification
GMO	Genetically modified organisms
GYA	Global Young Academy
HART	Hypertension in Africa Research Team
H2020	Horizon 2020
HSRC	Human Sciences Research Council
IAP	InterAcademy Partnership
INGSA	International Network for Government Science Advice
ICSU	International Council for Science
ICSU ROA	ICSU Regional Office for Africa
IID	Innovation for Inclusive Development
IP	Intellectual property
JSE	Johannesburg Stock Exchange
LIRA	Leading Integrated Research for Agenda 2030 in Africa
MNS	Mental, neurological and substance use
MoU	Memorandum of understanding
MRC	Medical Research Council
MTSF	Medium-Term Strategic Framework
NACI	National Advisory Council on Innovation
NAE	National Academy of Engineering
NAS	Nigerian Academy of Science
NASAC	Network of African Science Academies
NDP	National Development Plan
NEF	Next Einstein Forum
NEHAWU	National Education Health and Allied Workers' Union
NGO	Non-governmental organisation
NHLS	National Health Laboratory Service

NMF	Nelson Mandela Foundation
NMU	Nelson Mandela University
NRF	National Research Foundation
NSBPF	National Scholarly Book Publishers' Forum
NSEF	National Scholarly Editors' Forum
NSI	National System of Innovation
NSTF	National Science and Technology Forum
NWU	North-West University
NYAs	National Young Academies
OA	Open access
OJS	Open Journal Systems
OWSD	Organisation for Women in Science in the Developing World
OWSD-SANC	Organisation for Women in Science in the Developing World South African National Chapter
PAP	Pan-African Parliament
PFMA	Public Finance Management Act
RAE	Royal Academy of Engineering
RAS	Rwanda Academy of Sciences
R&D	Research and development
RCA	Regional Committee for Africa
RU	Rhodes University
SA	South Africa
SAAE	South African Academy of Engineering
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SAJS	South African Journal of Science
SADC	Southern African Development Community
SAICE	South African Institution of Civil Engineering
SAP	Science Action Plan
SARChI	South African Research Chair Initiative
SAYAS	South African Young Academy of Science
SciELO	Scientific Electronic Library Online
SciELO SA	Scientific Electronic Library Online – South Africa
SCSfRPI	Standing Committee on Science for the Reduction of Poverty and Inequality
SDGs	Sustainable Development Goals
SDH	Social Determinants of Health
SFSA	Science Forum South Africa
Sida	Swedish International Development Cooperation Agency
SITE	Science, innovation, technology and engineering
SfS	Science-for-Society
SKA	Square Kilometre Array
SPP	Scholarly Publishing Programme
SSA	Sub-Saharan Africa
S&T	Science and technology
STEM	Science, technology, engineering and mathematics
STI	Science, technology and innovation
SU	Stellenbosch University
TIA	Technology Innovation Agency
TUT	Tshwane University of Technology
TWAS	The World Academy of Sciences
TWAS ROCASA	TWAS Regional Office for Central & South Asia
TWAS ROSSA	TWAS Regional Office for sub-Saharan Africa
UCT	University of Cape Town
UFS	University of the Free State
UK	United Kingdom
UKZN	University of KwaZulu-Natal
UNESCO	United Nations Educational, Scientific and Cultural Organisation
Unisa	University of South Africa
UP	University of Pretoria

USA	United States of America
UWC	University of the Western Cape
VC	Vice-Chancellor
WEF	World Economic Forum
WHO	World Health Organisation
WISET	Woman in Science, Engineering and Technology
WoK	Web of Knowledge
WoS	Web of Science

Message from the President



I have now had the privilege of serving a full year as President of the Academy of Science of South Africa (ASSAf) and can speak with more confidence and authority about the work and prospects of the Academy as I introduce our 2017/18 Annual Report.

The Academy occupies a special place in the ecology of South African organisations concerned with the sciences broadly conceived to include the humanities, the social sciences and education. ASSAf is neither a government department nor a university faculty and yet it works closely with state officials and with academics from all 26 public universities. The Academy is an independent entity and yet is funded primarily through government with the duty to provide government with authoritative, evidence-based advice on matters of critical import to science and society. It is a South African academy and yet gains its strength and legitimacy from its relationships with academies around the world. In short, ASSAf is both independent from and yet interconnected with the rich network of authorities concerned with science policy, research and practice at home and abroad.

What does an Academy actually do? I have thought about this question often during this past year beyond the more obvious and vast range of activities that keeps the ASSAf staff so busy. Perhaps the most fundamental reason for the existence of an Academy is its honorific function: to recognise through Membership the most outstanding scholars and scientists in South Africa (SA). The Academy stands or falls by the quality of its Members and therefore the annual 'Call' for Membership occupies considerable time of the governing body, the Council which I chair, and its very active Nominations Committee led by Professor Himla Soodyall, General Secretary of the Academy.

It is, and should be a point of pride in the life of a researcher to be nominated for and accepted into Membership of the Academy of Science of South Africa. We notice when our Members achieve national and international awards and indeed the prestige awards of the Academy itself such as the Gold Medal for outstanding service to science and society and the Annual Humanities Book Award that recognises outstanding scholarship in the social sciences and humanities. We also take pride in our Members serving on distinguished committees around the world as they offer leadership to science communities everywhere. The very active South African Young Academy of Science (SAYAS) not only recognises some of our very best young scholars and

scientists, but prepares them for future roles in science leadership in ASSAf but also in the country and around the world. This, it seems to me, is what an Academy does – to recruit, honour, promote, advance and support current and future generations of researchers as Members of the South African academy.

Given our long history of colonialism and apartheid, our Membership reflects the inequalities of our troubled past when it comes to race and gender. And while we have made remarkable progress since the launch of ASSAf in May 1996, most of our Members are still white and male and representing mainly the sciences and engineering. Not a single meeting of Council passes without attention to this important aspect of our work – building a much more diverse and representative Academy. Some of this can be done by improving the nominations process from recruitment to election of new Members. But the only way in which we can significantly move the needle on equity in Membership is by strengthening the pipeline of black South African researchers coming through the university system with PhDs and becoming accomplished scholars and scientists in much larger numbers. To this end, I will be putting to Council a formal proposal for how this can be done and what role ASSAf, in particular, can play in accelerating the transformation of our Membership.

Beyond Membership, ASSAf commits to an incredible amount of work through its 36 staff and I have witnessed first-hand the sheer volume of activities being done by far too few staff – a point of concern that I shared at my very first presentation of our Annual Report to the Parliamentary Portfolio Committee on Science and Technology. I was impressed by the leadership of this committee of government and by the quality of questions from the floor. There is a genuine interest among our Parliamentary leaders in the quality and impacts of our science activities in the country.

One of the most direct links of the work of ASSAf to government is through the conduct of highly competent and credible 'consensus studies' now produced on a regular basis in the form of evidence-based advice on issues of pressing concern in the broader society. In the past year we have through our Members again produced three outstanding consensus studies which topics could not have been more urgent or timely. The first was on *The State of Climate Change Science and Technology in South Africa* (2017), *Revitalising Agricultural Education and Training* (AET) (2017), followed by *The State of Research, Development and Innovation of Electrical Energy*

Efficiency Technologies (2017). For each of these reports the strength of research leadership, the quality of evidence gathered and the value of the recommendations together make these consensus studies the high-water mark of ASSAf's work.

One of the other vital areas in which ASSAf plays a crucial role in building the strength of the science community in South Africa is through our work on scholarly publishing. In this respect, and under the very capable leadership of our former Presidents, Professors Wieland Gevers and Robin Crewe, ASSAf has been able to both review existing standards of accredited journals in selected fields, but also set new standards for ethics and excellence in academic journal publishing through the following studies *Twelve Years Later: Second ASSAf Report on Research Publishing in and from South Africa* (2018) and *Code of Best Practice in Scholarly Journal Publishing, Editing and Peer Reviewing*. These recommendations are then passed on to the relevant government department and it is our hope that ASSAf will continue to be a partner in ensuring that academic publishing in South Africa conforms with the highest standards associated with top research journals.

Another area of activity which I am excited about is the growing involvement of ASSAf in other African countries and, in particular, our work through the Network of African Science Academies (NASAC). We are actively involved in learning from and contributing to the continental activities of our sister academies. Such networks of African academies hold great potential for building a formidable science and scholarship enterprise across the continent that should, over time, reflect in a more productive and more accomplished research community whose work speaks to the pressing problems of our part of the world system.

On the one side of the ledger, is the work of ASSAf in recognising excellence in research as described; on the other side, is the responsibility of making science accessible to broader publics including schools and communities, but also scientists and scholars. In this regard I am excited about the work through *Quest* and other publications in taking world-class science to the youth of the country in ways that excite them about science for its own sake but also as a career choice into the future. At the same time, our open access platform is determined to make science and scientific knowledge through publications available without cost to those engaged in research. This charge of making science accessible to current and future scientists is something I regard as one of the most important commitments of ASSAf in a developing country.

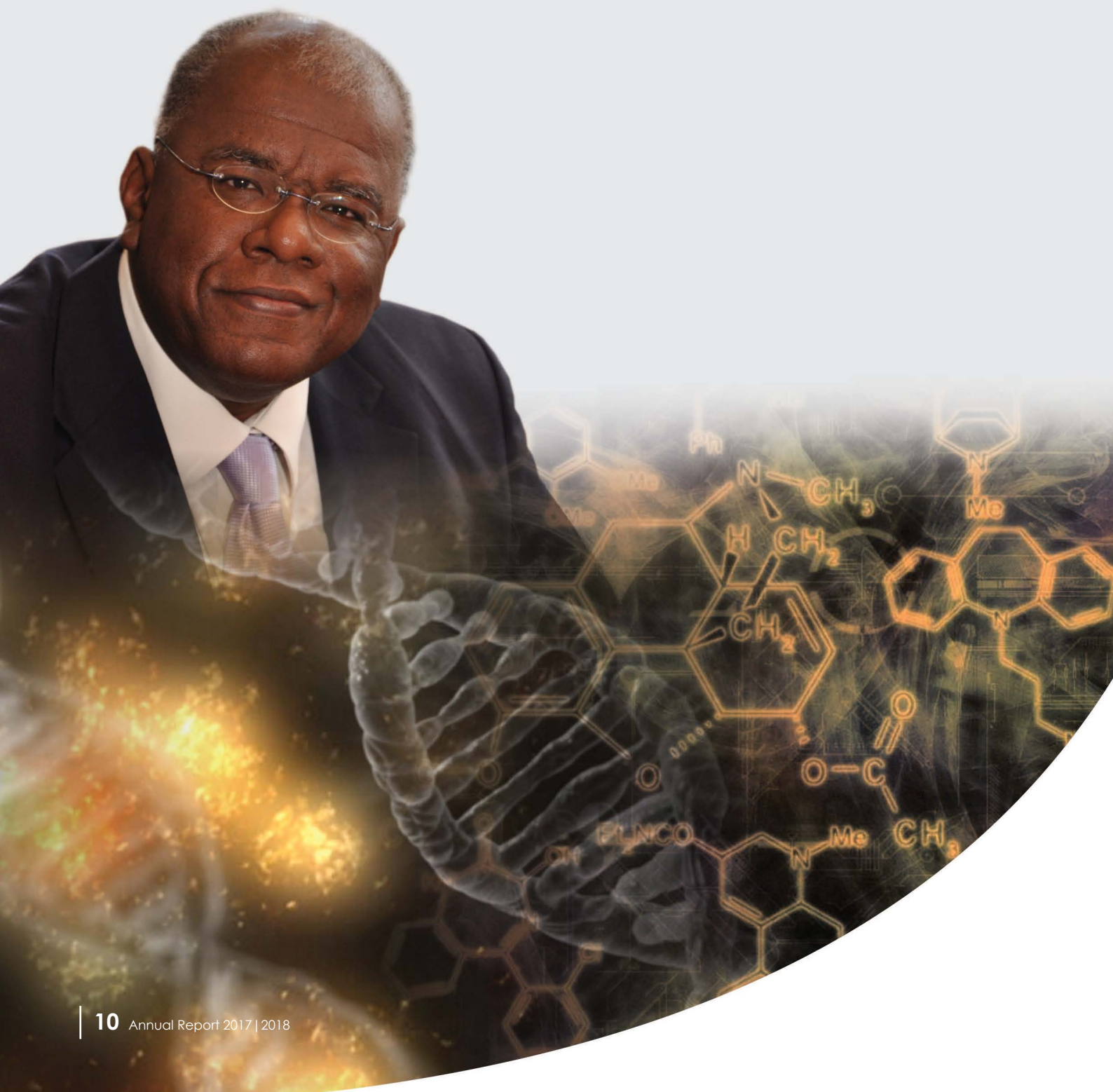
None of these accomplishments would have been possible without the exceptional leadership of Professor Roseanne Diab as the Executive Officer (EO) of ASSAf. The Academy could not have had a more competent and passionate advocate for science and society than this distinguished atmospheric scientist who as leader has built a formidable team of staff to carry forward the work of ASSAf when she retires at the end of this year. I would like to thank Professor Diab for her exemplary leadership in the national and international science community these past ten years, and for her devotion to ASSAf as an institution builder.

I now submit this report with confidence and excitement about ASSAf's continued contribution to science and society in our young democracy.

Jonathan D Jansen



Umyalezo ovela kuMongameli



Manje sengibe nelungelo lokukhonza unyaka wonke njengoMongameli weSikhungo Sesayensi SaseNingizimu Afrika (Academy of Science of South Africa [ASSAf]) futhi seingingakhuluma ngokuqiniseka okuthe xaxa nangegunya ngomsebenzi kanye nalokho okulindeleke ukuba kufezwe yiSikhungo njengoba ngethula uMbuko Wonyaka wethu ka-2018.

Lesi Sikhungo sidlala indima ekhethekile ekusebenzeni ngokubambisana kwezinhlangano zaseNingizimu Afrika ezisemkhakheni wesayensi eziklanyelwe ukuhlanganisa ezithinta abantu, isayensi yezenhloko kanye nemfundo. I-ASSAf ayiwona umnyango kahulumeni kanti futhi ayiyona iNyuvesi kodwa isebenzelana eduze neziphathimandla zikahulumeni kanye nezifundiswa ezivela kuwo wonke amaNyuvesi angu-26 kuleli. ISikhungo siyinhlangano ezimele kodwa ngokuyinhloko sixhaswa nguhulumeni ngokwezimali ngenjongo yokuba sinikeze uhulumeni iseluleko esinegunya nesisekelwe ebufakazini obutholakele ezindabeni ezibucayi eziphathelene nesayensi nomphakathi. Lesi yiSikhungo semfundo saseNingizimu Afrika, noma kunjalo amandla nokufaneleka kwaso sikuthola ebudlelaneni esinabo nezikhungo zemfundo emhlabeni jikelele. Ngamafuphi, i-ASSAf izimele geqe kodwa futhi isebenzelana eduze kakhulu neziphathimandla ezithintekayo kwezeyensi, ucwaningo nokusebenza kuleli naphesheya.

Senzani ngempela lesi Sikhungo? Ngike ngacabanga kaningana ngalo mbuzo kulo nyaka odlule ngadlulela ngale kwemisebenzi esobala neminingi egcina abasebenzi bakwa-ASSAf bematasatasa. Mhlawumbe isizathu esisempoka kakhulu sokuba khona kwalesi Sikhungo umsebenzi waso wokuhlonipha abathile: ukuqaphela ngenxa yokuba yiLungu kwezifundiswa ezivelele kanye nososayensi eNingizimu Afrika. Ukuma nokuwa kweSikhungo kuncike ezingeni lamaLungu futhi ngenxa yalokho 'umhlangano' wonyaka wamaLungu uthatha isikhathi ezingi somkhandlu olawulayo, uMkhandlu engingusihlalo wawo, kanye nabahlonishwa iKomiti Elikhethiwe eliholwa nguSolwazi uHimla Soodyall, onguNobhala Jikelele weSikhungo.

Kuyisizathu sokuziqhenya ekuphileni komenzi wocwaningo ukuba akhethwe futhi amukelwe njengeLungu LeSikhungo SeSayensi SaseNingizimu Afrika (Membership of Academy of Science of South Africa). Siyaqaphela lapho amalungu ethu ethola imihlomulo kazwelonke neyomhlaba, kanti nawo umhlomulo wezinga eliphakeme weSikhungo uqobo njengeNdondo Yegolide yomsebenzi ovelele kwezeyensi nasemphakathini kuhlanganise noMklomelo Wonyaka Wencwadi Yobuntu oqaphela ucwaningo olunzulu kuyisay-

ensi yezenhloko nesintu. Siyazigqaja nangokuba amaLungu ethu akhonze emakomitini abalulekile emhlabeni jikelele njengoba eholo emiphakathini yesayensi yonke indawo. Inhlangothi yentsha yakuleli i-South African Young Academy of Science (SAYAS) ayigcini nje ngokuqaphela abacwaningi nososayensi abasezingeni eliphakeme abasebancane bakuleli, kodwa futhi ibahlomisela nokuba babambe izikhundla esikhathini esizayo kwezeyensi kuyi-ASSAf nasezweni lonke kanye nasemhlabeni jikelele. Kimi lokhu kubonakala kuyilokho iSikhungo esikwenzayo—ukukhetha, ukuhlonipha, ukunyusa ngezinga, ukuthuthukisa nokusekela izizukulwane samanje nesizayo sabacwaningi ukuba babe amaLungu eSouth African Academy.

Uma sicabangela umlando wethu omude woku- ba yizwe elibuswa ngelinye kanye nombuso wobandlululo, isimo samaLungu ethu sibonisa ukungalingani obekulokhu kukhona esikhathini esidlule uma kuziwa kwezohlanga nobulili. Nakuba senze intuthuko ephawulekayo kusukela kwasungulwa i-ASSAf ngo-May 1996, iningi lamaLungu ethu okwamanje abamhlophe ngebala futhi abesilisa kanti ngokuyinhloko bamelele umkhakha wesayensi nobunjiniyela. Awukho nowodwa umhlangano woMkhandlu ophela kungazange kuxoxwe ngale ndaba ebalulekile yomsebenzi wethu—ukwakha iSikhungo esixubile nesimelelwa yibo bonke. Okunye kwalokhu kungenziwa ngokuba kuthuthukiswe inqubo yokukhetha kusukela ekutholeni amalungu amasha nasekuwamiseni njengamaLungu. Kodwa okuwukuphela kwendlela esingaliguqula ngayo izinga lokungalingani eMalungwini kungaba ukuqiniseka ukuthi baningi abamnyama baseNingizimu Afrika abasemzileni abangena emkhakheni wocwaningo emaYunivesithi abaneziqu zePhD futhi babe yizazi nososayensi abaqoqodile, babe baningi kakhulu. Ukuze kufezwe lokhu, ngizokwethula ngokusemthethweni eMkhandlwini isiphakamiso sendlela lokhu okungenziwa ngayo ngokuthi iyiphi indima engadlalwa ngokukhethile yi-ASSAf, ukusheshisa izinguquko endabeni yamalungu.

Ngaphandle kwendaba yamaLungu, i-ASSAf yenza umsebenzi omkhulu ngokubabazekayo ofezwa abasebenzi bayo abangama-36 futhi ngizibonele ngawami ubuningi bomsebenzi owenziwa abasebenzi abambalwa kakhulu esinabo—okuyinto ekhathazayo engayiveza lapho ngethula uMbiko wethu Wonyaka eKomitini LePhalamende leSayensi Nezobuchwepheshe (Technology). Bangihlaba umxhwele ubuholi baleli Komiti likahulumeni kanye nezinga eliphakeme lemibuzo eyayivela kwababelalele. Abaholi bethu basephalamende bayikhathalela

ngempela ikhwalithi kanye negalelo lemisebenzi yethu yesayensi kuleli zwe lakithi.

Enye indlela eqondile umsebenzi we-ASSAf oxhumana ngayo nohulumeni kungenxa Yokuziphatha okusezingeni eliphezulu nokuthembekile "kocwaningo olunokuvumelana" manje olukhishwa njalo njengeseluleko esisekelwe ebufakazini ezindabeni ezikhathaza kakhulu emphakathini kabanzi. Ngonyaka odlule siphindile ngosizo lwaMaLungu ethu sakhapha ucwaningo olunokuvumelana oluvelele olukhuluma ngezihloko ebeziphuthuma nezifike ngesikhathi ezidingeka ngaso. Olokuqala lwaluphathelene nesihloko esithi *The State of Climate Change Science and Technology in South Africa (2017)*, kwalandela esithi *Revitalising Agricultural Education and Training (AET) (2017)*, kanti esamuya nje besithi *The State of Research, Development and Innovation of Electrical Energy Efficiency Technologies (2017)*. Embikweni ngamunye kulena amandla ocwaningo, ikhwalithi yobufakazi obuqoqiwe kanye nokuba nohlonze kwezinkomo ezethuliwe kwenza lolu cwaningo lube olwezinga eliphakeme kakhulu lwe-ASSAf.

Enye yezindawo ezisemqoka i-ASSAf edlala kuzo indima ebucayi ekwakheni amandla omphakathi wesayensi eNingizimu Afrika ukushicilela imisebenzi yocwaningo lwesayensi. Kulo mkhakha, nangaphansi kokuhola aboMosgamele odlule, uSolwazi uWieland Gevers, Robin Crewe i-ASSAf iye yakwazi ukubukeza izimiso ezikhona zezincwadi ezigunyaziwe ezishicilelwe emikhakheni ethile, kodwa akupheleli lapho, iye yabeka nezimiso ezintsha zokuziphatha nokwenza ngezina eliphameke ekushicileleni omagazini bezemfundo kulokhu okulandelayo emkhakheni wocwaningo *Eminyakeni Eyishumi Nambili Kamuya: Umbiko Wesibili we-ASSAf Wocwaningo Olushicilelwayo ENingizimu Afrika [Report on Research Publishing in and from South Africa (2018)]*; Imithetho Yokuziphatha Okungcono Kwezocwaningo Oluzoshicilelwa (*Code of Best Practice in Scholarly Journal Publishing*), Ukubukeza Okulungisiwe (*Editing and Peer Reviewing*). Lezi ziphakamiso zibe sezidluliselwa emnyangweni kahulumeni ofanele futhi sethamba ukuthi i-ASSAf izoqhubeka ibambisene nabanye ekuqinisekeni ukuthi izinto zemfundo ezishicilelwayo eNingizimu Afrika ziyavumelana neziqondiso zezina eliphakeme ezihlobene nocwaningo lwezinga eliphezulu olushicilelwayo.

Omunye umkhakha wokusebenza enginesasasa kakhulu ngawo ukwanda kwezinga i-ASSAf ebamba ngalo iqhaza kwamanye amazwe ase-Afrika kanye, ngokukhethekile, umsebenzi

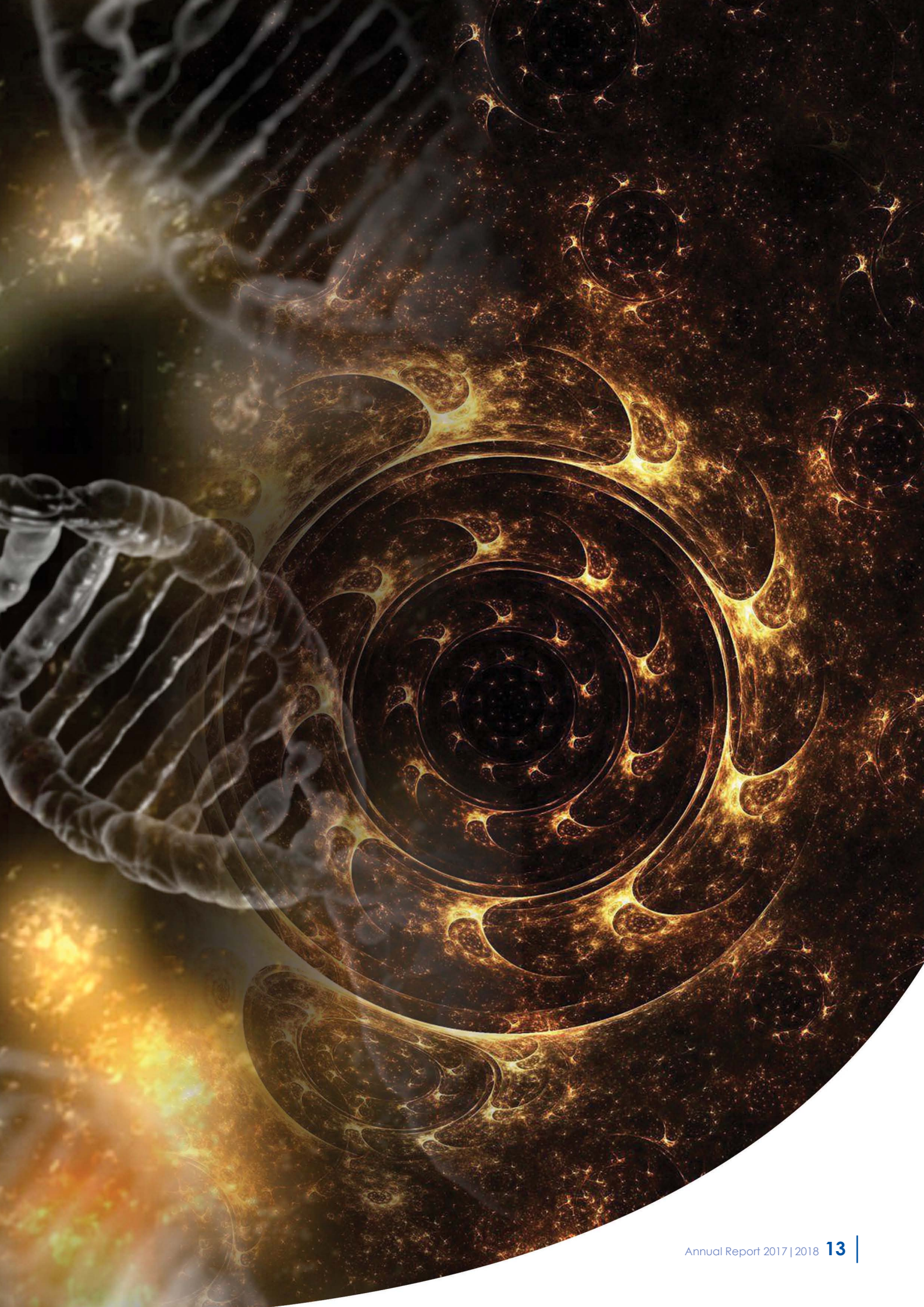
wethu ngenxa yenhlangano yeNetwork of African Science Academies (NASAC). Sihileleke ngokugcwele ekufundeni nasekufakeni isandla emisebenzini yezwekazi lase-Afrika yezinhlangano zezemfundo ezinjengeyethu. Ubudlelwano obunjalo bezemfundo e-Afrika bunethuba lokwakha isayensi esezingeni eliphakeme nocomkanyo kulo lonke leli zwekazi okuyothi ngokuhamba kwesikhathi, bubonise izithelo nomphakathi wocwaningo ophumelelayo owenza umsebenzi osingatha izinkinga ezikhathazayo ohlangothini lwethu lomhlaba.

Ngakolunye uhlangothi, umsebenzi we-ASSAf ukuqaphela izinga eliphakeme ocwaningweni njengoba kuchaziwe; kanti kolunye uhlangothi, inomthwalo wokwenza isayensi ifinyelelwe umphakathi omningana kuhlanguanise izikole nomphakathi, kodwa futhi nososayensi nabacwaningi. Ngokuqondene nalokhu ngijabula kakhulu ngomsebenzi owenziwa yi-Quest kanye nezinye izincwadi ngokuthatha isayensi yezina lomhlaba iyilethe entsheni yakuleli ngezindlela ezenza iyithande isayensi ngokwalokho eyikho kanye nokuyikhetha njengomkhakha wemfundo esikhathini esizayo. Ngesikhathi esifanayo, iplatifomu yethu evulekele wonke umuntu izimisele ukwenza isayensi nolwazi lwesayensi olutholakala ngezincwadi ezishicilelwe lutholakale mahhala kulabo abenza ucwaningo. Lo msebenzi wokwenza isayensi ifinyeleleke kososayensi bamanje nabesikhathi esizayo uyinto engiyibheka njengebaluleke kakhulu ekuzinikeleni kwe-ASSAf ezweni elisathuthuka.

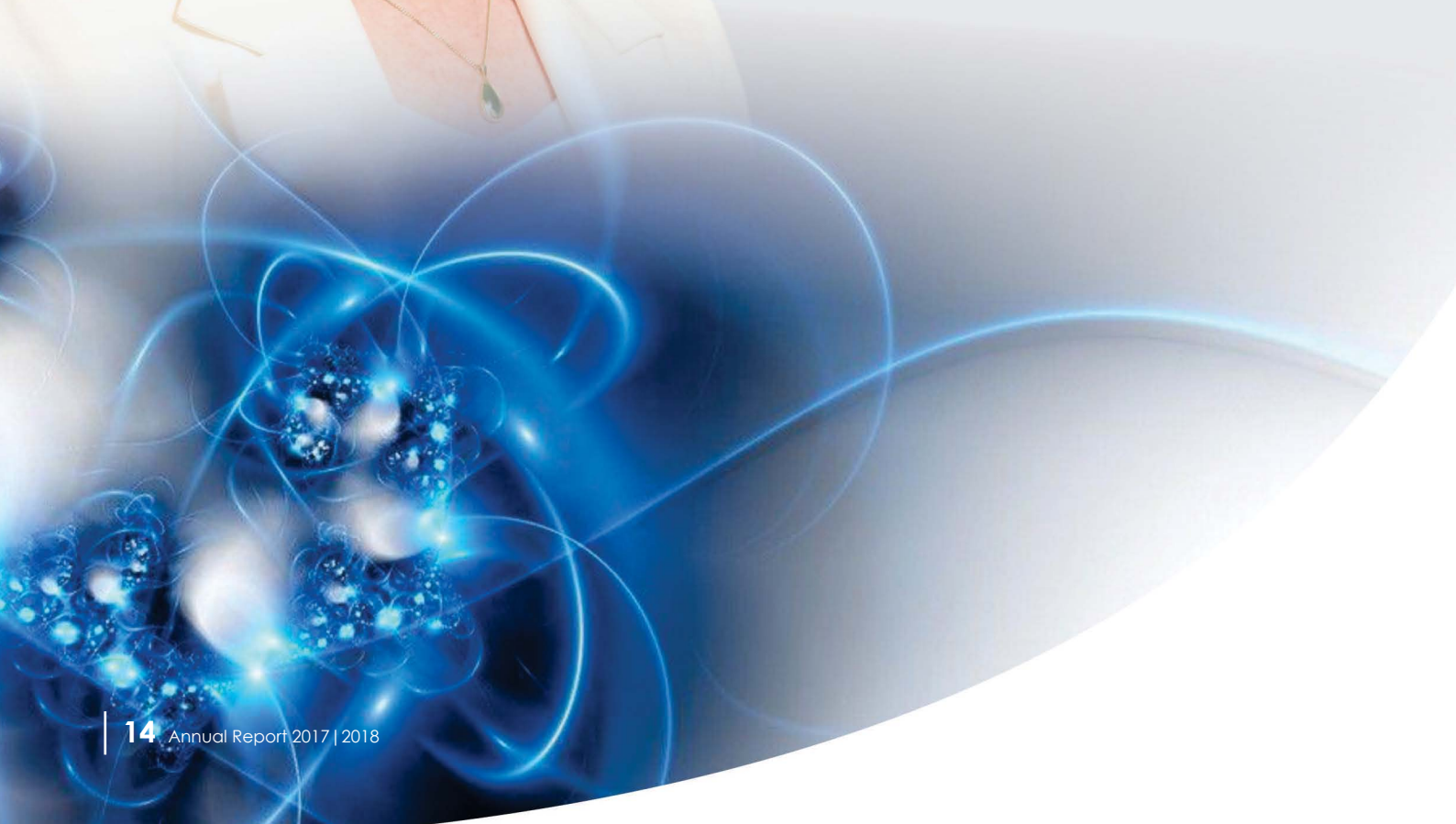
Akukho kulokhu okufeziwe obekungafezwa ngempumelelo ngaphandle kosizo lobuholi bukaSolwazi uRoseanne Diab obesebenza njengoMqondisi we-ASSAf (Executive Officer). ISikhingo besingeke simthole umuntu ofanelekayo noyishisekela kangaka isayensi nomphakathi ngezina lo sosayensi okhethekile, njengomholi oye wakha ithimba eliqinile ukuze liqhubekisele phambili umsebenzi we-ASSAf lapho yena ethatha umhlalaphansi ekupheleni kwalo nyaka. Ngithanda ukumbona uSolwazi uDiab ngokuholakakhe ngendlela eyisibonelo emphakathini wesayensi kuzwelonke nasemhlabeni jikelele kule minyaka eyishumi edlule, nangokuzinikela kwakhe ku-ASSAf njengomakhi walesi sikhungo.

Manje ngethula lo mbiko ngokuqiniseka nangenjabulo ngokuqhubeka kwe-ASSAf inikela kuyisayensi nasemphakathini entandweni yeningi esafufusa kuleli.

UJonathan D Jansen



Message from the Executive Officer



This is my last report as Executive Officer of ASSAf, having signaled my intention to retire in December 2018, after ten years at the helm. I write this report with a feeling of immense pride at what has been achieved but with mixed feelings knowing that I will no longer play an active role in shaping ASSAf's future.

There is no doubt in my mind that ASSAf is a national treasure having grown from a fledgling organisation in 1996 to a highly respected body capable of fulfilling a valuable role in the National System of Innovation (NSI). That there is untapped and unrecognised potential goes without saying. Indeed, the greatest challenge of ASSAf going forward will be to reveal its full potential to a much wider audience so that it can be fully appreciated and utilised by all.

ASSAf is unique. Its shared dual role – one honorific that establishes it as the apex scholarly Membership-based organisation based on excellence, and the second, its science advisory role, sets it apart from other entities in the science system. ASSAf's strength lies in its Membership of distinguished researchers elected on merit for their scholarly work *and* for their service to society. It is seldom appreciated what value lies in this volunteer service, be it mentoring of young, especially women scientists, writing popular articles for ASSAf's science magazine, *Quest*, or serving on study panels.

The question most frequently asked of me is what is the impact of ASSAf's activities? This is not a trivial question and one that I generally answer in an anecdotal fashion by means of an example or two. But the significance of the question remains and it is perhaps appropriate that at this juncture, when the leadership of ASSAf will be changing and with the benefit of hindsight, that I reflect more deeply on the question in an annual performance report which records the Academy's many and significant achievements over the past year.

I select two areas of ASSAf's activities to consider impact.

The first is the area of young scientists' activities. What did ASSAf aim to achieve when it introduced its focus on young scientists back in 2010 with the hosting of its first young scientists' conference and with the founding of the South African Young Academy of Science (SAYAS) in 2011. Certainly SAYAS arose out of a recognition that ASSAf had a responsibility to foster the next generation of research leaders but also to involve young scientists in the ongoing work of the

Academy, and to expose them to the science-policy arena and thereby enhance evidence-based policymaking, and also to foster service to society amongst the younger generation.

The extent to which these goals have been achieved lies in the numerous leadership opportunities that have been provided to young scientists through nominations for awards, occasions to represent South Africa at international meetings, for example the World Economic Forum (WEF), World Science Forum and Lindau Nobel Laureate meetings and the Young Physician Leaders programme. Young participants, including a South African, at the WEF meeting in 2009 can be credited with the establishment of the Global Young Academy (GYA), today a highly respected international body. Membership of a national young academy has provided direct connections to a global community of young scientists which is increasingly held in high esteem by leading international scientific organisations, with leading young scientists being sought after to give expression to the young scientists' voice. What, if anything, has changed in the lives of those exposed to such opportunities and what can be attributed directly to ASSAf's interventions? Examples abound of young SAYAS members who have fulfilled or are fulfilling international leadership positions in the GYA, Next Einstein Forum (NEF) and the International Network for Government Science Advice (INGSA) Africa. There is also evidence of young SAYAS alumni who have been successfully elected to the senior academy, ASSAf, with the promise of more to come. Furthermore, there is a cohort of young SA scientists, 78 to date, who are steeped in the academy tradition of providing science advice in support of policy development. Arguably this experience could not have been acquired elsewhere and is leading to SAYAS now being able to produce its own impactful evidence-based reports. Improved networking, exposure to communication workshops and opportunities to conduct outreach activities in disadvantaged schools to demonstrate their commitment to promoting science awareness, are just a few of the benefits of ASSAf's many interventions.

A critical impact question remains. Have these interventions led to an increase in the quality of research undertaken? This is far more difficult to measure and may take many years before meaningful impact is felt. However, one of the key underpinning drivers is embedded in feedback from participants in the Lindau Nobel Laureate and NEF meetings who are inspired to greatness.

The second example lies in the publication of ASSAf's consensus study reports, which are the Academy's flagship products. These in-depth, evidence-based reports provide recommendations aimed primarily at influencing policy. Impact is generally only evident over the long term and is often measured by means of a case-study approach.

A good example is ASSAf's 2006 *Report on a Strategic Approach to Research Publishing in South Africa*. There were many recommendations contained in this report that were aimed at improving the visibility and quality of SA scholarly publications; some were practical and some were policy-relevant. Most of the practical recommendations have been successfully implemented by ASSAf at the request of the Department of Science and Technology (DST) with the support of the then Department of Education. Examples include the establishment of the National Scholarly Editors' Forum (NSEF) and the fully indexed open access online platform known as the Scientific Electronic Library Online - South Africa (SciELO SA).

Impact may be measured in terms of progress against the original goals of improving visibility and quality and by documenting what has changed and what additional 'spin offs' there have been. Improved visibility is relatively easy to quantify; 72 South African journal titles are currently accessible on the SciELO OA platform and a total of 24 104 journal articles have been downloaded as at the end of 2017/18. From a finding in the 2006 report that many SA journals which were mainly print-based, with small circulations and hence were invisible to the international scientific community, to a situation in 2017/18 where over 60% of the downloads from SciELO SA are from outside South Africa, is a major improvement.

The *South African Journal of Science (SAJS)*, the Academy's own publication has experienced a

significant increase in its public exposure through reports in the print media as a result of the introduction of SAJS Highlights – popular summaries of articles that are circulated widely to 15 000 recipients. In 2017/18, there were 43 media reports based on SAJS articles, raising public awareness of SA research in a significant way.

Improvement in quality is less tangible and hence harder to quantify. Editors of SA scholarly journals have benefitted from an annual national editors' forum which provides a platform for amongst other things, sharing of best practices and latest trends; an evaluation of their journals through ASSAf's peer review panels with recommendations for improvement; the publication of guidelines for editors; and technical assistance to under-resourced journals on managing the workflow involved with open access publishing. As the journals become more visible and are published regularly, the submission of articles increases, thereby allowing editors to be more selective in those that they publish, leading to a natural evolution in quality of articles.

A further element of impact is related to the often unintended spin-offs that ensue. For example, ASSAf's experience and reputation in open access publishing was undoubtedly key to ASSAf being selected by the DST as the host and implementer of the African Open Science Platform (AOSP); the impact of this major continent-wide initiative is yet to be realised.

Finally, I would like to express my sincere thanks to the ASSAf staff – a more dedicated and loyal team one could not hope to find. They deserve most of the credit for ASSAf's achievements this past year. I leave ASSAf knowing that it is very ably steered by an experienced and wise Council supported by a highly motivated and competent secretariat.

Roseanne Diab



Part A: Strategic Overview



1 Vision

The Academy of Science of South Africa (ASSAf) aspires to be the apex organisation for science and scholarship in South Africa (SA), recognised and connected both nationally and internationally. Through its Membership which represents the collective voice of the most active scholars in all fields of scholarly enquiry, ASSAf aims to generate evidence-based solutions to national problems.

2 Mission

The mission of the Academy is to:

- Recognise scholarly achievement and excellence in the application of scientific thinking for the benefit of society.
- Mobilise Members to ensure that they are available to contribute their expertise in the service of society.
- Conduct systematic and evidence-based studies on issues of national importance, producing authoritative reports that have significant impact on policymaking.
- Promote the development of an indigenous system of South African research publications, increasing their quality, visibility, accessibility and impact.
- Publish science-focused periodicals that will showcase the best of southern African research to a wide national and international audience.
- Develop productive partnerships with national, regional and international organisations with a view to building our capacity in science and its application within the National System of Innovation (NSI).
- Create diversified sources of funding for sustainable functioning and growth of a national academy.
- Communicate effectively with relevant stakeholders through various media and fora.

3 Values

ASSAf's strength resides in the quality and diversity of its Membership; internationally renowned scholars elected by their peers, who give of their time voluntarily in the service of society. The Membership could be regarded as the 'brains trust' of the nation. ASSAf is able to use its Membership as a collective resource for evidence-based solutions to national problems. Through the well-recognised convening power of academies, ASSAf is able to mobilise the best scientific minds from across the nation, as well as internationally, to provide authoritative advice to government and other stakeholders based on scientifically rigorous analysis of evidence and consensus of diverse experts. As such, ASSAf is an independent, non-biased and credible source of scientific advice. The diversity of its Membership, embracing the full disciplinary spectrum, enables ASSAf to focus on issues of a multi-disciplinary, multi-sectoral nature and to bring the strengths of a fully inclusive approach to bear on the issues of national and international concern.

ASSAf fully embraces the principles espoused in the Constitution of South Africa.

The further value of the Academy is its promotion of excellence through election to Academy Membership and awards, and the fostering of scholarly activity through the provision of fora for scholarly activities and debate.

Science advisory activities in support of policy development are a common feature of academies around the world, all using an evidence-based approach based on the convening of experts with diverse perspectives to discuss and illuminate issues.

It is important to distinguish the niche of the Academy from other organisations within the NSI in terms of science advice. Key universal elements of Academy advice are that it is:

- Authoritative
- Independent
- Objective
- Free of vested interests
- Trusted
- Based on volunteer contributions

- Based on rigorous analysis of evidence and peer review
- Transparent
- Multi-disciplinary and able to address complex issues that transcend disciplinary boundaries.

4 Legislative and Other Mandates

The Academy's activities are guided by the ASSAf Act (No 67 of 2001), as amended by the Science and Technology Laws Amendment Acts (No 16 of 2011 and No 7 of 2014), and a set of established regulations that collectively comprise the Academy's Constitution.

4.1 The Academy of Science of South Africa Act (No 67 of 2001)

This Act establishes the Academy of Science of South Africa (ASSAf), which provides evidence-based scientific advice on issues of public interest to government and other stakeholders. ASSAf regularly publishes its findings and recommendations. It acknowledges the achievements of South African scientists in order to develop the intellectual capacity of the nation and promote innovative, scholarly thinking.

4.2 Science and Technology Laws Amendment Acts (No 16 of 2011 and No 7 of 2014)

The purpose of the Acts was to amend the Acts of various science entities, including ASSAf, so as to harmonise processes relating to membership of boards.

Additional policies that are taken into account when identifying strategic priorities of ASSAf are:

- Public Finance Management Act (PFMA) (No 1 of 1999).
- National priorities outlined in the Medium-Term Strategic Framework (MTSF).
- White Paper on Science and Technology (1996).
- Ten-Year Innovation Plan for Science and Technology (2008 – 2018).
- New Growth Path (2010).
- National Skills Development Strategy (2011).
- National Development Plan (NDP) (2012).

5 Organisational Structure

As a Membership-based organisation, the key intellectual resources of the Academy reside in its Membership, which currently comprises 541 Members as at the end of March 2018. Forty-one new Members were elected in 2017. One Member of the Academy, Dr Gerhard von Gruenewaldt, passed away during the year.

The secretariat, with 36 staff members, is headed by an Executive Officer (EO), Prof Roseanne Diab. During the reporting year, there were two resignations, one dismissal and three new staff members appointed to fill vacant positions.

ASSAf currently hosts the International Council for Science Regional Office for Africa (ICSU ROA) and provides human resources, financial and information technology services as part of the hosting agreement. The ICSU ROA comprises five fixed-term employment staff members and an intern.

The activities of the Academy are structured into four programmes as follows: Governance and Administration Programme; Scholarly Publishing Programme; Liaison Programme; and Science Advisory Programme.

ASSAf is currently accommodated in rented premises in Perseus Park, Pretoria. The lease has been renewed until 30 June 2019. The acquisition of a building remains a key imperative for ASSAf in order to avoid the escalating rental costs, to cater for expansions and to be able to secure a permanent home for the Academy.

6 Council

ASSAf is governed by a Council, comprising 12 elected members and a 13th member appointed by the Minister as a representative of the National Advisory Council on Innovation (NACI).

6.1 Council Composition

President and Chairperson



Prof Jonathan Jansen is the immediate past Vice-Chancellor (VC) and Rector of the University of the Free State (UFS) and currently Distinguished Professor in the Faculty of Education at the Stellenbosch University (SU). He is a Fellow of the American Educational Research Association, a Fellow of The World Academy of Sciences (TWAS) and also President of the South African Institute of Race Relations. His book, *Knowledge in the Blood: Confronting Race and the Apartheid Past* published in 2009 won the Nayef Al Rodhan Prize, the largest award from the British Academy for the social sciences and humanities, for its contribution to scholarly excellence and trans-cultural understanding. In 2013, he was awarded the Education Africa Lifetime Achiever Award in New York and the Spendlove Award from the University of California for his contributions to tolerance, democracy and human rights. He holds honorary degrees from the University of Edinburgh, the University of Vermont and Cleveland State University. His recent books include *As by Fire – The End of the South African University* on the current crisis in, and future prospects of, the South African university, and *Leading for Change*.

Vice-Presidents



Prof Nyameko Barney Pityana was the Rector of the College of the Transfiguration, Grahams-town. He is the former Principal and VC of the University of South Africa (Unisa). He was Chairperson of Higher Education South Africa and Chairman of the African Council for Distance Education.



Prof Brenda Wingfield holds the Department of Science and Technology-National Research Foundation (DST-NRF) South African Research Chair Initiative (SARChI) Chair in Fungal Genomics and is Professor of Genetics at the University of Pretoria (UP). She also served as the Chair of the National Science and Technology Forum (NSTF) until recently and is the recipient of the prestigious Harry Oppenheimer Fellowship for her outstanding research.

General Secretary

Prof Himla Soodyall is a Principal Medical Scientist at the National Health Laboratory Service (NHLS) and Associate Professor at the University of the Witwatersrand (Wits). She is a recipient of the National Order of Mapungubwe (Bronze).



Treasurer

Prof Thomas Eugene Cloete is Vice-Rector, Research and Innovation at SU. He is a former recipient of the ASSAf Science-for-Society Gold Medal award. He is the Founding Director of the SU Water Institute.



ASSAf Council Members



Prof Stephanie Burton is Vice-Principal: Research and Post-graduate Education at UP.



Prof Norman Duncan is Professor in Psychology and Vice-Principal: Academic at UP.

Prof Sabiha Essack is the DST-NRF SARCHI Research Chair in Antibiotic Resistance and One Health and Professor in Pharmaceutical Sciences at the University of KwaZulu-Natal (UKZN).



Prof Shireen Hassim* is Professor of Politics at Wits.

*Prof Hassim resigned at the end of February 2018 to pursue other commitments.



Prof Johann Mouton is Professor in, and Director of the Centre for Research on Evaluation, Science and Technology and the DST-NRF Centre of Excellence for Scientometrics and Science, Technology and Innovation (STI) Policy at SU.



Prof Refilwe Phaswana-Mafuya is the Deputy Vice-Chancellor (DVC): Research and Innovation of the North-West University (NWU) and Honorary Professor at Nelson Mandela University (NMU).

Prof Zeblon Vilakazi is DVC: Research and Postgraduate Affairs at Wits.



NACI Representative

Dr Shadrack Moephuli is the President and Chief Executive Officer (CEO) of the Agricultural Research Council (ARC) and is appointed by the DST Minister as a NACI representative.



Council Advisors



Prof Wieland Gevers is Emeritus Professor of Medical Biochemistry and former Senior DVC at the University of Cape Town (UCT). He is a former President of ASSAf (1998 – 2004), a Fellow of TWAS and a recipient of the National Order of Mapungubwe (Silver).



Prof Evance Rabban Kalula is Professor and Director of the International Academic Programmes Office and the Confucius Institute. He holds a personal chair as Professor of Employment Law and Social Security, UCT.



Prof Sunil Maharaj is Director of the Astrophysics and Cosmology Research Unit and holds the SARChI Research Chair in Gravitating Systems and is a Senior Professor of Applied Mathematics at the UKZN. He is the former Treasurer of ASSAf (2011 – 2016).

6.2 Council Meeting Attendance

The ASSAf Council met five times during 2017/18, one being the Strategic Planning Meeting held on 7 February 2018. Office-bearers' attendance of the Council meetings averaged 88%, while the average attendance rate of non-office-bearers, including the Advisors to Council, was 74.5%.

Council Members	Attendance
Prof Stephanie Burton	4
Prof Eugene Cloete	5
Prof Norman Duncan	4
Prof Sabiha Essack	5
Prof Wieland Gevers ¹	4
Prof Shireen Hassim ²	1
Prof Jonathan Jansen	4
Prof Evance Kalula ¹	4
Prof Sunil Maharaj ¹	4
Dr Shadrack Moephuli	1
Prof Johann Mouton	4
Prof Refilwe Phaswana-Mafuya	5
Prof Barney Pityana	5
Prof Himla Soodyall	5
Prof Zeblon Vilakazi	5
Prof Brenda Wingfield	3

¹ Advisors

² Resigned February 2018

Part B: Performance Information



1 Overview

1.1 Service Delivery Environment

ASSAf is the official national science academy of South Africa, established by an Act of Parliament (No 67 of 2001), as amended, and represents South Africa in the international community of science academies. ASSAf is part of a network of over 130 global science academies known as the InterAcademy Partnership (IAP) and is also a member of the Network of African Science Academies (NASAC).

ASSAf has a dual role – to honour distinguished scholars through election to Membership of the Academy, and to provide science advice to government and other stakeholders on critical national and global issues.

ASSAf's science advisory role in support of policy development is informed by key national challenges, particularly those outlined in the NDP, and is executed in both a responsive and proactive manner. ASSAf strives to address cross-cutting and complex issues that suit the particular convening strength and niche of an Academy. The Academy's strength lies in undertaking in-depth, evidence-based studies, and also seeks to implement projects in collaboration with other science academies in Africa and abroad, in its efforts to influence regional and global policy.

ASSAf has been the host organisation of ICSU ROA with effect from May 2015, and which is planned for a period of five years. Since March 2015, ASSAf has also hosted The World Academy of Sciences Regional Office of sub-Saharan Africa (TWAS ROSSA). The responsibilities attached to these two offices align closely with ASSAf's strategic goals and strengthen co-operation within Africa.

ASSAf supported the founding of the South African Young Academy of Science (SAYAS) and continues to provide secretariat support and funding to support their activities. Office space and support services are provided to the South African Academy of Engineering (SAAE) at no cost.

ASSAf continues to act as secretariat to the Committee of Heads of Organisations for Research and Technology (COHORT).

1.2 Alignment with Government Policies

ASSAf is committed to the outcomes approach as developed by government (<http://www.info.gov.za/issues/outcomes/index.html>).

It will contribute towards addressing impact indicators and achieving outputs and targets associated with the 14 outcomes outlined in the government's MTSF for 2015 to 2020 that have been linked to objectives set in the NDP.

In order for ASSAf to fulfil its science advisory role regarding key challenges facing the nation, a variety of consensus studies and policy commentaries are undertaken. Over and above their scientific advisory function, evidence-based study activities provide an important mechanism for establishing and strengthening international links, securing external project-related funding, and in mobilising ASSAf Members to volunteer their service on committees and panels. Studies generally fall into broad categories related to: health; education; climate change; energy; the science-policy nexus; biosafety and biosecurity; and poverty reduction. Once concluded, considerable effort is expended in disseminating the findings to ensure effective uptake of the recommendations and enhance their impact.

Their alignment with government priorities and DST's grand challenges is shown in the following table.

DST Grand Challenges	ASSAf Evidence-based Study Activities	Government Priorities
From Farmer to Pharma (Biotechnology)	<ul style="list-style-type: none"> – Genetically Modified Organisms (GMOs) in African Agriculture: Challenges & Opportunities – Regulation of Agricultural Genetic Modification (GM) Technology – Clinical Research & Related Training in SA – Improved Nutritional Assessment – State of Biosafety & Biosecurity in SA – The Regulatory Implications of New Breeding Techniques – Legal, Ethical and Social Considerations of Human Genetics and Genomics – Revitalising Agricultural Education and Training in SA 	<ul style="list-style-type: none"> – Improvement of rural development and food security – Improvement of health profile of society – Strengthening of the skills and resource base of SA
Space Science and Technology	–	–
Energy	<ul style="list-style-type: none"> – Improving Access to Energy in sub-Saharan Africa – Nuclear Energy Safety – State of Energy Research in SA – Technical Readiness of SA for the Shale Gas Industry – State of Green Technologies in SA – State of Energy Efficiency in SA 	<ul style="list-style-type: none"> – Improvement of rural development and food security – Improvement of environmental assets and natural resources
Global Change	<ul style="list-style-type: none"> – Low Carbon Cities – Science, Water and Sanitation – State of Green Technologies in SA – Technological Innovations for a Low Carbon Society – Environment and Health – Biennial Review of the State of Climate Science Research and Technology in SA – Mid-term Review of Global Change Grand Challenge (GCGC) 	<ul style="list-style-type: none"> – Improvement of environmental assets and natural resources
Human and Social Dynamics	<ul style="list-style-type: none"> – PhD Study – State of Humanities in SA – STEM Education – Scholarly Publishing Programme – Revitalising Agricultural Education and Training in SA 	<ul style="list-style-type: none"> – Strengthening of the skills and resource base of SA

The triple challenges of the NDP, namely unemployment, poverty and inequality are addressed largely through ASSAf's third goal related to the provision of evidence-based scientific advice. Through the ASSAf Standing Committee on Science for the Reduction of Poverty and Inequality, appropriate studies are identified and implemented.

Contribution to the Reduction of Poverty, Inequality and Unemployment

ASSAf Contribution	Poverty	Inequality	Unemployment
Direct	<p>In 2015, the Standing Committee on Science for the Reduction of Poverty and Inequality was reconstituted and re-named to align more closely with the NDP triple challenges of poverty, inequality and unemployment.</p> <p>Published a policymakers' booklet on Social Protection in Africa.</p>	<p>Transformation of the ASSAf Membership in terms of race and gender.</p> <p>Ensuring that the Membership of ASSAf panels and committees is fully representative in terms of race and gender.</p>	<p>Employment of DST/NRF interns and ensuring that they are equipped with marketable skills.</p>
Indirect	<p>Hosted the Annual Meeting of African Science Academies (AMASA) in November 2016, with the theme Poverty Reduction.</p>	<p>The values of ASSAf, which was formed explicitly after the democratic elections in 1994, fully embrace the principles of the Constitution of SA.</p>	<p>Raising of science awareness and providing information on science careers through the publication of Quest science magazine.</p>

1.3 Significant Developments/Major Projects

ASSAf celebrated its 20th anniversary in 2016. Two commemorative publications on the history of ASSAf spanning the first 20 years and a book profiling outstanding achievement by ASSAf Members, entitled, *Legends of South African Science*, were launched on 25 July 2017 at a gala event.

Authoritative evidence-based studies aimed at providing critical scientific advice take cognisance of the NDP's triple challenges, as well as the government outcomes. Many of the Academy's current studies address skills development challenges for a knowledge-based economy. ASSAf published three consensus study reports during the year – *The State of Climate Change Science and Technology in South Africa*, *Revitalising Agricultural Education and Training (AET) in South Africa*, and *The State of Research, Development and Innovation of Electrical Energy Efficiency Technologies in South Africa*.

The first report, *The State of Climate Change Science and Technology in South Africa* was undertaken on behalf of the DST and endorsed by Cabinet. The report supports the NDP's vision to set South Africa on a transition to an environmentally sustainable, climate change resilient, low-carbon economy and just society.

ASSAf currently has a Membership of 541 top scholars in South Africa across diverse scientific disciplines who could be regarded as the 'brains trust' of the nation to be drawn upon as a collective resource for evidence-based solutions to national problems.

Scientific Electronic Library Online South Africa (SciELO SA), the first fully open access platform for scholarly publishing in South Africa and on the continent, has 72 South African journal titles. The collection is included in the Web of Knowledge (WoK) and SCOPUS search platforms, significantly increasing the visibility of South African scholarly journals.

The Academy issued one statement for action on the country's social grants' crises on 11 December 2017.

Internationally, ASSAf has strengthened collaboration with African and overseas academies of science. It continues to represent South Africa on a number of continental and global science advice bodies, including NASAC and the IAP. ASSAf also hosts two regional offices of key international partners, namely ICSU and TWAS.

1.4 Service Delivery Improvement Plan

With its Membership its biggest strength, one of the challenges facing the Academy is the need to transform its Membership better to reflect transformation and equality as envisaged in the Constitution.

The Academy has embarked on a dedicated drive to enhance its Membership transformation through greater regionalisation of activities with regular networking and information sharing sessions at universities around the country.

A national conference on the shale gas industry in South Africa was hosted in partnership with the DST from 31 August to 1 September 2017. The conference followed the publication of the ASSAf report on *South Africa's Technical Readiness to Support the Shale Gas Industry*. The conference aim was to shape processes going forward to create an enabling framework for shale gas development in South Africa.

As part of its Member engagement, and to further its profile and mandate of pursuing an evidence-based approach to building knowledge, the Academy has embarked on a series of round-table discussions around the country to discuss science and society and address and draw national and international attention to issues of pressing public concern.

ASSAf has been actively involved in the international community of academies of science and has started to align itself more strategically with academies in important groupings such as the Brazil, Russia, India, China and South Africa (BRICS) group.

ASSAf's contribution to improving and supporting scholarly publishing in multiple ways was viewed as a groundbreaking initiative. The African Open Science Platform (AOSP) initiative launched in 2016 promotes the development and coordination of data policies, data training and data infrastructure. AOSP continued to explore the African landscape in terms of open data, and valuable relationships were established with many key stakeholders.

1.5 Strategic Outcome-oriented Goals

The ASSAf Act provides the framework for identifying the Academy's overarching goals, within which the strategic priorities and focus for the next five-year period are outlined.

Overarching goals of ASSAf are as follows:

- Recognition and reward of excellence
- Promotion of innovation and scholarly activity
- Promotion of effective, evidence-based scientific advice
- Promotion of public interest in and awareness of science and science education
- Promotion of national, regional and international linkages

These are closely aligned with those of the NDP and the DST as shown in the following summary table.

The broad goals of government, applicable within the context of ASSAf activities, are as follows:

- Responsive, coordinated and efficient NSI
- Increased knowledge generation
- Human capital development
- Using knowledge for economic development
- Knowledge utilisation for inclusive development

Strategic Outcome-oriented Goals	Activities	Government goal statements
1 Recognition and reward of excellence	<ul style="list-style-type: none"> Targeted Membership drives to increase and diversify Academy Membership Award of Science-for-Society Gold Medals annually Award of Humanities Book Prize Support of South African Young Academy of Science Nomination of SA scientists for international awards and opportunities 	<ul style="list-style-type: none"> Human capital development
2 Promotion of innovation and scholarly activity	<ul style="list-style-type: none"> Hosting of Distinguished Visiting Scholar annually Hosting of regional scholarly lectures Hosting of annual ASSAf Humanities lecture Publication of <i>SA Journal of Science</i> Convening of workshops/symposia on a wide variety of topics Conducting project-related activities Implementation of Scholarly Publishing Programme Promotion of young scientists' activities Promotion of women in science activities 	<ul style="list-style-type: none"> Human capital development
3 Promotion of effective, evidence-based scientific advice	<ul style="list-style-type: none"> Implementation of Scholarly Publishing Programme Implementation of evidence-based studies in targeted areas such as health, education, climate change, energy, etc. Dissemination of study reports for improved uptake and impact of evidence-based studies 	<ul style="list-style-type: none"> Increased knowledge generation Human capital development Using knowledge for economic development
4 Promotion of public interest in and awareness of science and science education	<ul style="list-style-type: none"> Publication and promotion of <i>Quest: Science for South Africa</i> magazine Participation in national science events Hosting of public lectures on a wide variety of topics Implementation of STEM Education Committee activities 	<ul style="list-style-type: none"> Human capital development
5 Promotion of national, regional and international linkages	<ul style="list-style-type: none"> Strengthening and initiating bilateral Academy agreements Strengthening and initiating science academies in Africa, particularly the SADC region Taking a leadership role in implementing the NASAC Strategy 2016-2020 Hosting and support for ICSU ROA and TWAS ROSSA 	<ul style="list-style-type: none"> Increased knowledge generation

The triple challenges of the NDP, namely unemployment, poverty and inequality are addressed largely through ASSAf's third goal related to the provision of evidence-based scientific advice. Through the Standing Committee on Science for the Reduction of Poverty and Inequality, appropriate studies are identified and implemented. The NDP acknowledges the role that STI can play in addressing poverty,

unemployment and inequality. ASSAf has begun to identify a transformation strategy and implementation plan in which its work within the NSI could contribute to the reduction of inequality, poverty and unemployment. ASSAf's activities to promote international liaison will align with the NDP's Chapter 7 (Positioning South Africa in the World), and respond directly to the MTSF outcome 11: Creating a better South Africa and contributing to a better and safer Africa in a better world.

2 Performance Information by Programme

The activities of the Academy are structured into four programmes as follows: Governance and Administration Programme; Scholarly Publishing Programme; Liaison Programme; and Science Advisory Programme.

2.1 Programme 1: Governance and Administration

This programme is central to the efficient functioning of the Academy, providing essential administrative and financial support to the Council and the secretariat. This programme is also responsible for all reporting requirements and compliance matters, including the annual audits, the Strategic Plan, the Annual Performance Plan (APP) and quarterly reports. A monitoring and evaluation component is also part of this programme's responsibilities.

2.1.1 Governance

The overall strategic objective is to ensure good governance of the Academy through the ASSAf Council. This includes execution of Council elections, support of Council meetings and committees, efficient and effective execution of Council resolutions and efficient and effective financial and human resource management activities.

Four Council meetings are held each year, with a fifth being held in the year of new Council elections. An additional strategic meeting was also held by Council on 7 February 2018.

Standing committees of Council include the Audit and Risk Committee, the Human Resources Committee and the Executive Committee, which are tasked with taking decisions in the intervals between Council meetings. The Annual General Meeting was held on 11 October 2017 and was attended by some 50 Members.

Academy governance activities are executed in accordance with the requirements as outlined in the ASSAf Act and the Science and Technology Laws Amendment Acts. A concerted effort, hampered by budgetary constraints, is being made to ensure full compliance with the PFMA and the Treasury regulations. Council is the highest decision-making body of the Academy entrusted with the responsibility to ensure smooth and effective governance in the execution of the Academy's mandate.

All activities relating to the ASSAf Council, ASSAf legislation and regulations fall into this sub-programme.

2.1.2 Finance and Risk

This sub-programme ensures that financial management systems are in place so that ASSAf's resources are prudently and optimally utilised. Compliance is central to all activities.

Responsibilities include budgeting, financial reporting, procurement and risk management. With effect from mid-2015, there has been an increased focus on supply chain management and risk management.

Four Audit and Risk Committee meetings were held during the reporting year.

ASSAf compiled a Risk Register in May 2016 and embarked on a strategy to prioritise risks and address and mitigate identified risk factors. The foremost risk facing ASSAf is that of financial sustainability and the reliance on externally-generated project-based funding for most of its activities.

2.1.3 Human Resources

This function provides ASSAf with human resources management services as follows: staff recruitment and retention; staff training and development; staff performance monitoring; staff disciplinary procedures; development and implementation of human resources systems; and development, implementation and monitoring of organisational policies and procedures.

The secretariat, with 36 staff members, is headed by an EO, Prof Roseanne Diab. Two staff members resigned and one was dismissed. Three new staff members joined ASSAf.

ASSAf currently hosts the ICSU ROA and provides human resources, financial and information technology services as part of the hosting agreement. The ICSU ROA comprises five fixed-term employment staff members and an intern.

The National Education Health and Allied Workers' Union (NEHAWU), although no longer a majority union, remains a substantively representative union within the organisation. A Relationship Agreement has been drafted to regulate the relationship between the parties.

The Human Resources Committee of the ASSAf Council met twice during the reporting period.

2.1.4 Knowledge Management

This is a new function, the need for which has been identified as a result of ASSAf's increased activities and an increased focus on reporting and compliance. It involves, *inter alia*, the development of systems and processes for comprehensive records and documents management, both electronic and paper-based, to support decision-making and performance auditing.

All ASSAf reports are digitally archived in the Research Repository allowing for impact monitoring, specifically downloads and citations.

2.1.5 Communication

The main purpose of this sub-programme is to provide effective and targeted communication with ASSAf stakeholders to support the vision of the Academy to be the apex organisation of science and scholarship in South Africa and to increase the visibility and standing of ASSAf. It aims to build the ASSAf brand and to communicate the achievements of ASSAf and its Members to ASSAf stakeholders. ASSAf stakeholders include Members, representatives of government and other science councils, universities, sponsors and the public.

The sub-programme ensured visibility of ASSAf and its activities in the media through the issue of 28 media releases. The print and online media are monitored regularly to determine uptake and impact of Academy activities.

The sub-programme is also responsible for the ASSAf website, the quarterly ASSAf e-newsletter and the production of reports. Four *Science-for-Society* e-newsletters were distributed, reaching some 12 000 recipients per edition.

ASSAf has introduced a social media strategy and policy and has seen a significant increase in following.

The sub-programme undertook the production of 14 reports, of which three were consensus studies, and a book. An e-publication strategy for study reports has been adopted, thereby considerably reducing production and printing cost of ASSAf's various reports.

The ASSAf evidence-based reports produced were:

The State of Climate Change Science and Technology in South Africa – May 2017

Revitalising Agricultural Education and Training in South Africa – June 2017

The State of Research, Development and Innovation of Electrical Energy Efficiency Technologies in South Africa – September 2017

Report on Grouped Peer Review of Scholarly Journals in Architecture, Built Environment and Engineering – March 2018

Science, Business, Society Dialogue Conference – April 2017

Regional Workshop on Gender Monitoring in STI and SADC Protocol – June 2017

Cultural Sensitivity in Diplomacy Workshop – August 2017

Research in Science, Innovation, Technology and Engineering (SITE) and Gender Round Table – August 2017

Role of Science Academies in the National System of Innovation – August 2017

Young Scientists Conference – October 2017

Shale Gas Conference Proceedings – December 2017

Gender and Innovation: Implications for Sustainable Development – February 2018

3rd Worldwide Meeting of National Young Academies. One Health – Health and Development in the Context of an Urbanising Planet and Implications for Science Policy – March 2018

A report, *The State of Climate Change Science and Technology in South Africa* was undertaken on behalf of the DST, and endorsed by Cabinet. The report supports the NDP's vision to set South Africa on a transition to an environmentally sustainable, climate change resilient, low-carbon economy and just society.

A commemorative book marking ASSAf's 20-Year Celebration, *Legends of South African Science*, was produced and launched in July 2017. The book was well received which necessitated a second print run in September 2017.

ASSAf provided editorial services for the production of a booklet of the Organisation for Women in Science in the Developing World (OWSD), *Because Science is Fun*, on emerging young women scientists in August 2017.

In addition, the 2016/17 ASSAf *Annual Report* was produced in August 2017.

Various online platforms were supported. The ASSAf website had 31 237 sessions over the period under review, with 67 653 page views. A total of 131 posts was loaded.

An ASSAf Facebook account was established on 27 May 2016; the account had 695 followers at the end of March 2018. Over the period under review the page received 319 likes with a post reach of 40 500 users and 1 828 engagements.

ASSAf has grown its Twitter follower audience from 1 580 on 1 April 2017 to 3 338 on 31 March 2018. The top tweet for the period under review was that on Commonwealth Academies urges using Science in Climate Change Actions.

The sub-programme delivered support to 22 conferences, workshops and other events hosted by the Academy.

Table 1: Programme 1: Strategic Objective Annual Targets and Performance Indicators for 2017/18

Strategic objective	Planned target	Performance indicator	Actual performance 2016/17	Actual performance 2017/18	Variance	Status	Comment
To increase the visibility and standing of ASSAf	20	No. media releases	39	28	+8	Exceeded target	Increased ASSAf activities
	4	No. issues electronic Science-for-Society news-letter	4	4	0	Achieved	

2.2 Programme 2: Scholarly Publishing Programme

The Scholarly Publishing Programme (SPP) is regarded as a major intervention into the NSI in South Africa. The strategic goal of the SPP is to enhance the national capacity to produce and publish research, on the one hand, and to increase the quality and visibility of South African research publications, on the other. It is also making a valuable contribution to improved access to international scholarly publications, an essential ingredient for human capital development in a modern, rapidly developing knowledge-based economy such as South Africa.

The responsibilities for the publication of the *South African Journal of Science (SAJS)* and *Quest: Science for South Africa* are also included in this programme, consolidating all ASSAf's activities related to scholarly publishing in a single programme. The *SAJS* aims to promote the visibility and impact of South African and African research and *Quest: Science for South Africa* promotes awareness of science amongst the youth.

Activities of this programme are clustered into the following three thrusts:

- Open Science
- Quality Assurance
- Research Publishing

2.2.1 Open Science

SciELO SA: Open Access Platform

The Scientific Electronic Library Online (SciELO) SA Collection (www.scielo.org.za) was started in 2009 as a full-text searchable database of selected, high-quality open access South African scholarly journals. A total of 72 journals is now available on the SciELO SA platform. It includes approximately 1 500 issues and 24 000 articles.

Due to reprioritisation of the budget within ASSAf some new titles were added to the collection this year. Some of the major achievements have included: (1) the inclusion of SciELO SA on the WoK and SCOPUS search platforms; and (2) the inclusion of SciELO SA as an index for automatic accreditation under the *Research Outputs Policy*.

The impact of the SciELO SA open access platform is routinely monitored. Since its inception in 2009, the collection has been viewed almost 1.7 million times, more than a million since the previous financial year. Details of countries with the highest access rates provide strategic guidance on the potential sphere of influence of South African research publications, as well as highlighting potential opportunities for future partnerships. Detailed statistics on the number of times a particular journal and even a particular article have been accessed are available.

SciELO SA Collection (1 April 2017 – 31 March 2018)

Date	Articles	Issues	Titles	Date
1 April 2017	21 094	1 363	65	1 April 2017
31 March 2018	24 104	1 526	72	31 March 2018
Percentage increase	12.5 % collection increase			

In November 2017, the collection scored 95% in its bi-annual evaluation by the SciELO Network to assess whether the SciELO SA collection is adhering to the strict SciELO Network criteria and that all the titles adhere to the SciELO Citation Index (which forms part of the WoK search portal) criteria with regard to publishing according to the stated periodicity.

ASSAf Research Repository

The ASSAf Research Repository currently includes 71 ASSAf publications: <http://research.assaf.org.za/>. The collection includes ASSAf Consensus Study Reports, Workshop Proceedings and Other Reports, Policymakers' Booklets, and *Quest: Science for South Africa*.

The top-ten viewed ASSAf publications and the corresponding PDF downloads of those publications at the end of March 2018 are as follows:

	Publication title	Views end March 2018	PDF downloads end March 2018
1	<i>South Africa's Technical Readiness to Support the Shale Gas Industry</i>	2 538	1 645
2	<i>Legends of South African Science</i>	1 649	1 131
3	<i>State of Climate Change Science & Technology in SA</i>	1 017	863
4	<i>Revitalising Agricultural Education and Training in South Africa</i>	999	504
5	<i>Quest Volume 13 Number 2 2017</i>	711	643
6	<i>Quest Volume 12 Number 3 2016</i>	631	194
7	<i>Quest Volume 13 Number 1 2017</i>	608	214
8	<i>Regulatory Implications of New Breeding Techniques</i>	583	539
9	<i>State of Biosafety and Biosecurity in South Africa</i>	538	242
10	<i>The Shale Gas Industry in SA: Towards a Science Action Plan</i>	452	176

Open Data/African Open Science Platform

The AOSP initiative – launched in 2016 by the former Minister of Science and Technology, Mrs Naledi Pandor – is now in its second year (November 2017 – October 2018), creating awareness of the need for science and data to be open, as well as the need for data to be managed and shared in trusted ways, and Africa becoming accountable for its own research data. Its purpose is to put into practice the principles and enabling practices for open data and open science articulated in the *Accord on Open Data in a Big Data World*. All activities are documented on the web page for the project, and feedback and progress reports are regularly shared with the stakeholder community.

To date, more than 800 data-related activities have been identified across the continent, with all being recorded as part of a database. Individual researchers working with data have been added to the database of experts, now reaching more than 1 000 individuals. Both databases have already demonstrated value, connecting the research community on the African continent through data, at the same time showcasing what Africa has to offer in terms of data-intensive research and in achieving the 2030 United Nations Sustainable Development Goals (SDGs).

Deliverables for Year 2 included frameworks for the four focus areas, to guide governments and other stakeholders towards:

- developing policy on managing data, and making research data as open as possible;
- providing for the necessary infrastructure to make the sharing of data possible;
- creating opportunities for capacity development across various sectors (researchers, policymakers, ICT support staff, librarians, and more);
- providing incentives to researchers for sharing data.

In addition to delivering a large number of presentations and workshops, AOSP partnered with national and international stakeholders and contributed to many events, such as those organised by the Association of African Universities (AAU), Research Data Alliance, the ICSU Committee on Data for Science and Technology (CODATA), African National Research Education Networks, governments (including Madagascar, Botswana, Uganda, South Africa, Ethiopia), the Pan-African Parliament (PAP), the European Union (EU), United Nations Educational, Scientific and Cultural Organisation (UNESCO) and more. In addition to working with partners, AOSP also participated in international events, advocating for more collaboration in data sharing between the North and the South.

A high-level meeting organised by the DST brought together thought leaders from the continent, but also from outside, discussing the future of the project and the next phase – towards an integrated platform including the African Research Cloud, aligning existing initiatives with the AOSP strategy, but also building on existing initiatives. This meeting will be followed up by a second meeting later this year, during which the list of invitees will be expanded to even more stakeholders who can contribute to a continental African Research Cloud with buy-in from all African governments – to include policy, infrastructure, capacity building, and incentives – a reality, in a tangible form from which all of Africa will benefit.

ASSAf – through AOSP – is a valuable partner to the International Data Week 2018 Conference, to be co-hosted by Botswana, the Research Data Alliance and CODATA, from 5 – 8 November 2018. In addition to financial support, ASSAf Members are actively contributing to the planning of an international event in order to put the focus of the world on data in Africa. This is also an important outcome of the project itself.

Open Access Week

Open Access Week is a global event in which South Africa has been participating for the past ten years, with ASSAf actively engaged since 2015.

During the International Open Access Week in October 2017 a series of webinars (3) was presented to stimulate dialogue on incentives for sharing data. These webinars were hosted by ASSAf, and in total attended by 86 individuals from all over the world. The presenters included Dr Louise Bezuidenhout, Prof Martin Wittenberg and Veerle van den Eynden.

Open Research South Africa

In early 2017, DST started drafting a new White Paper on Science and Technology. This White Paper will guide the strategic direction of the South African system for research and innovation for the next decade. The country needs to be a leading African knowledge provider of 21st century technology and thinking, utilising 21st century skills.

The new White Paper addresses policy options in respect of developing a South African integrated digital strategy that would define the key enabling role that ICTs would play in order for the country to respond favourably to the requirements of the fourth industrial revolution, regional transformation and a digital society. To achieve this, a national digital policy should be introduced to regulate research data sharing and access, its integrity, privacy and intellectual property (IP).

A set of recommendations developed by ASSAf on research data sharing/open science has been considered by the authors of the White Paper. These include open science, which encompasses open access to scholarly publications, open data, and open and collaborative research, all essentially related to the broad dissemination of knowledge.

A Position Statement on open science for South Africa is being developed. This provides an opportune time to start developing legislation that will codify the requirements and standards for open access in South Africa. Over the last decade, SA has increased its participation in global projects and has begun to consider the implications of the explosion in big data. An open science policy to derive the maximum benefit from the internationalisation of its research programmes is necessary.

DST, with input from ASSAf, has approached the EU through their bilateral agreement and dialogue facility to share open science policy interventions and experiences. This opportunity will create opportunities for policy learning between SA and the EU, and will also assist the scientific community and government to identify interventions that could create an enabling environment to support open science partnerships between SA and EU scientists and the public sector.

2.2.2 Quality Assurance

Discipline-grouped Peer Review of South African Scholarly Journals

The *Report on Grouped Peer Review of Scholarly Journals in Architecture, Built Environment and Engineering* was finalised and published on ASSAf's website and research repository in March 2018. <http://www.assaf.org.za/index.php/publications/evidence-based-reports>.

A Peer Review Panel meeting of the journals in the Communication and Information Science disciplinary group took place on 8 November 2017.

The Humanities II: Visual and Performing Arts Peer Review panel meeting was held on 22 November 2017.

Reviews in the following three subject groups will be conducted in the next period: Education (17 journals); History, Philosophy and Politics (25 journals) and Mathematics and Science (22 journals).

Online Journal Management Workshops

ASSAf SPP presented two workshops on high-quality open access journal publishing, using Open Journal Systems (OJS) open source software. The workshops were as follows:

- 24 & 25 May 2017: Journal editors from UKZN. The workshop was organised by Carol Bertram from the School of Education and Faith Bhengu, the Principal Librarian from the College of Humanities. The UKZN Teaching and Learning Office funded the workshop.
- 13 June 2017: Editors and journal managers of the *Journal of the Southern African Institute of Mining and Metallurgy*, Chamber of Mines, Johannesburg.

National Scholarly Book Publishers' Forum (NSBPF)

The NSBPF document of Best Practice for Peer Review of Scholarly Books has been approved and was circulated to the Department of Higher Education and Training (DHET).

National Scholarly Editors' Forum (NSEF)

A webinar for journal editors on Identifying Questionable Journals was presented by Tom Olijhoek, Editor-in-Chief of the Directory of Open Access Journals (DOAJ), on 2 March 2018.

The Code of Best Practice in Peer Review and Editorial Discretion has been updated after consultation with a group of editors from the NSEF. The new document will be published online and will include links to relevant resources.

2.2.3 Research Publishing

Committee on Scholarly Publishing in South Africa

The Committee on Scholarly Publishing in South Africa (CSPiSA) oversees the work of the SPP and could not meet during the reporting year due to financial constraints.

A meeting is planned for 10 April 2018.

National Site Licence Initiative

By August 2017, the Minister of Science and Technology had endorsed the business case. The DHET has yet to endorse under their new Minister following the latter department to initiate negotiations and preparations for a national site license system for access to electronic scientific journals and databases.

2.2.4 South African Journal of Science (incl. ASSAf-hosted journals)

The upgraded federated OJS platform that hosts six journals, including the SAJS, was launched on 11 January 2018. The upgraded platform has a more user-friendly interface and a newer look and feel, and includes article metrics such as views and downloads that were not available for the five journals on the earlier version of the platform. Agreement has been received from all the journals to implement Altmetric on the platform; implementation is underway. Altmetric provides a score – an article-level metric – which indicates an article's impact or reach via Facebook, Twitter, social bookmarking, blogs and general news coverage.

Since the SAJS was migrated to the platform, 91 research articles have been submitted, 58 have been rejected, 18 are under review and six have been accepted. The January/February issue was published on the new platform on 30 January 2018 and the March/April issue was published on 27 March 2018.

Two articles in the January/February 2018 issue which were featured in the Editors' Choice, entitled Human Uses and Indigenous Knowledge of Edible Termites in Vhembe District, Limpopo Province, South Africa and Palaeodemographics of Individuals in Dinaledi Chamber using Dental Remains, were widely shared via social media with a potential reach on Twitter of 156 000 and 59 000 readers, respectively.

Two featured articles in the March/April issue entitled The Role of the Square Kilometre Array (SKA) in South Africa's Economic Development Strategy and Temporal Ranges and Ancestry in the Hominin Fossil Record: The Case of *Australopithecus sediba* were also shared widely via Twitter with potential reaches of 9 900 and 29 000, respectively. The article on edible termites was reported widely in traditional media with news reports appearing in the *Saturday Star*, *Cape Argus* and *TimesLIVE*. These articles also received the highest number of views on the website, with the January/February articles receiving 1 400 views each since publication and the *A. sediba* article receiving 1 200 views in the first week after publication.

To further disseminate the research published in the SAJS, the journal registered with AlphaGalileo in March 2018. AlphaGalileo is a service for research and media communities and covers science, medicine, technology, social science, humanities, arts and high-tech business. Alerts on new content are sent to their users. The featured articles were submitted to them for coverage and each has received 200 – 300 views via this service in the first week after publication.

The annual meeting of the Editorial Advisory Board of the SAJS was held in Cape Town on 21 February 2018. The Western Cape-based Associate Editors also met with the editorial team in Cape Town on 21 February 2018 and the Gauteng-based Associate Editors met in Pretoria on 28 March 2018.

The SAJS is introducing an Associate Editor mentoring programme for the purposes of transformation and succession planning.

The programme will be open to early career researchers from underrepresented groups who have a PhD and a good publication record but little or no editorial experience. The programme will involve a one-year mentoring period for two candidates in two different disciplines per year.

Mentees will work closely with an Associate Editor and will gain valuable editorial experience. After a period of training provided by the mentor and editorial office, the mentee will be responsible for making initial assessments, selecting reviewers and making recommendations to the Associate Editor/mentor who will oversee the mentee and provide guidance and advice.

The first call for applications will be in the fields of Social Sciences and Education and Earth and Environmental Sciences. The call will be advertised online and on social media later in 2018.

2.2.5 Quest: Science for South Africa

ASSAf's popular science magazine, *Quest: Science for South Africa*, is a full-colour, quarterly science magazine directed at a target audience comprising learners, educators and the public. *Quest* has extended its boundaries in this past reporting year in terms of reach and has made a contribution in the science literacy space and in science engagement.

With a print run of 13 000 per quarter, *Quest* is distributed to schools, public libraries, universities, government departments, embassies, media houses and subscribers. The balance is used for science promotion and career guidance.

The social media platform is growing modestly in terms of science promotion and showcasing of *Quest*'s involvement in national science events. The *Quest* Facebook page likes have grown from 436 in March 2017 to 549 and Twitter's at 317 followers.

Science Engagement

The goal of ASSAf's science engagement strategy is to develop a relationship between science and society, and thus create 'a scientifically-engaged South Africa' through:

- Providing high-level science-based scholarly advisory reports to the government (including Parliament), through fostering relationships with science organisations, non-governmental organisations (NGOs) and industry groups, and stimulating community thinking on the big national challenges.
- Increasing public scholarly input into scientific research and policy agendas through ASSAf awards, scholarly lectures, workshops and conferences.
- Encouraging young South Africans to take up careers in science and engineering through *Quest* and to initiate partnerships and links in order to support a number of young scientist initiatives nationally.

A science engagement strategy has been developed.

Table 2: Programme 2: Strategic Objective Annual Targets and Performance Indicators for 2017/18

Strategic objective	Planned target	Performance indicator	Actual performance 2016/17	Actual performance 2017/18	Variance	Status	Comment
To increase the visibility, accessibility and searchability of SA accredited journals	0	No. of new journal titles on the SciELO SA open access platform	3	7	+7	Exceeded target	The re-allocation of funds internally enabled the addition of new titles to the collection
To improve the quality of SA scholarly journals, books, and conference proceedings	1	No. of peer review reports published ¹	0	1	0	Achieved	
	0	No. of National Scholarly Publishers' Forums hosted	1	0	0		
	0	No. of National Scholarly Editors' Forums hosted	1	0	0		
To promote visibility and impact of SA research through the publication of the <i>South African Journal of Science</i>	6	No. of issues of SAJS published	6	6	0	Achieved	
To promote awareness of science amongst the youth through Quest science magazine	4	No. of issues of Quest published	4	4	0	Achieved	

¹Peer-review reports are defined as a review report evaluating books and conference proceedings; a review report evaluating new journal applications; or a peer review of discipline-grouped scholarly journals.

2.3 Programme 3: Liaison Programme

The Liaison Programme is structured into a number of sub-programmes, each of which is designed to establish and strengthen partnerships and engagement with key stakeholders and organisations, with the overall purpose of promoting and recognising excellence and scholarly achievement; strengthening and enhancing international scientific linkages; and advancing engagement with key policymakers in government, including Parliament and relevant national scientific organisations.

The internal structure of the programme is as follows:

- Member Liaison, which includes all aspects pertaining to Academy Member elections and communication with Members.
- National Liaison, which is divided into strategic partnerships; scholarly lectures; prizes and awards; and science engagement.

- International Liaison, which is divided into Strategic Partnerships; Africa Collaboration; and Overseas Collaboration.
- Young Scientists' Liaison, which ensures young scientists' participation in STI activities nationally, regionally and globally.
- Gender and STI, which aims to promote gender mainstreaming and the application of a gender lens.
- Hosting international organisations, including TWAS ROSSA and ICSU ROA.

Strategic objectives of this programme are to:

- Increase and diversify the Membership of the Academy.
- Recognise and reward excellence in science and promote scholarly activity.
- Collaborate with and strengthen African science academies.
- Increase participation of young scientists in science-related activities.
- Increase participation of women in science-related activities and promote the application of a gender lens in Academy activities.

2.3.1 Member Liaison

The core asset of science academies is their Membership and their ability to draw on highly qualified scientists from a large range of disciplines to assist in the science advisory role.

In its criteria for Membership, ASSAf places particular emphasis on the application of scientific thinking to the problems and challenges facing South African society. It draws its Membership from all population groups and from all scientific disciplines. Although Academy Membership has increased, there is still under-representation of blacks, women and certain disciplines. Each year in its Membership call, ASSAf strives to reflect more accurately the changing profile of South African scholars. The current gender and racial profile of ASSAf is 26% female and 30% black.

The anticipated amendments to the ASSAf Act in terms of Membership are expected to contribute to realising transformation targets of the Academy.

A record number of 41 new Members was elected and inaugurated in October 2017.

New Members elected to ASSAf are:

Prof Alan Bernstein – Prof Bernstein is President and CEO of the Canadian Institute for Advanced Research and holds academic positions at the University of Toronto and the UKZN.

Prof Pascal Bessong – Prof Bessong is Research Professor of Microbiology and Global Health, and Head of the HIV/AIDS and Global Health Research Programme at the University of Venda.

Prof André Boraine – Prof Boraine is the Dean of the Faculty of Law at the UP. He also serves as Co-director of the Centre for Advanced Corporate and Insolvency Law based in the faculty.

Prof Sonja Bosch – Prof Bosch is Chair of Department of African Languages at Unisa.

Prof Christiaan (Tiaan) de Jager – Prof De Jager is the Dean of the Faculty of Health Sciences at the UP and the Director of the Institute for Sustainable Malaria Control at Unisa.

Prof Zodwa Dlamini – Prof Dlamini is the Deputy Vice-Chancellor: Research, Innovation and Engagements at the Mangosuthu University of Technology.

Prof Adrienne Edkins – Prof Edkins is Director: Biomedical Biotechnology Research Unit at Rhodes University (RU) and holds the DST/NRF South African Research Chair in Molecular and Cellular Biology of the Eukaryotic Stress Response.

Prof Loretta Feris – Prof Feris is Deputy Vice-Chancellor: Transformation at the UCT. She was previously Professor of Law and Director of the Institute of Marine and Environmental Law.

Prof Karen Hofman – Prof Hofman is research Professor in the Faculty of Health Sciences at Wits and Honorary Associate, Division of International Health, John Hopkins Bloomberg School of Public Health, Baltimore, (USA).

Prof Isabel Hofmeyr – Prof Hofmeyr is Professor of African Literature at Wits and Global Distinguished Professor at New York University.

Prof Jenny Hoobler – Prof Hoobler is Professor and Deputy Dean for Research and Postgraduate Studies at the UP, Faculty of Economic and Management Sciences.

Prof Ashraf Kagee – Prof Kagee is Distinguished Professor, Department of Psychology, SU.

Prof Ayesha Kharsany – Prof Kharsany is an Honorary Associate Professor in the Department of Medical Microbiology at UKZN and a Senior Scientist at the Centre for the AIDS Programme of Research in South Africa (CAPRISA).

Prof Antoinette Lombard – Prof Lombard is Professor in Social Work and Head of the Department of Social Work and Criminology at the UP.

Prof Crick Lund – Prof Lund is Director: Alan J Flisher Centre for Public Mental Health Department of Psychiatry and Mental Health, UCT and is Visiting Professor, Department of Health Service and Population Research Institute of Psychiatry, Psychology and Neuroscience, King's College London.

Prof Judith Masters – Prof Masters is Research Professor, African Primate Initiative for Ecology and Speciation, Faculty of Science and Agriculture, University of Fort Hare.

Prof Thebe Medupe – Prof Medupe is Professor of Physics at NWU. His field of expertise is astronomy.

Prof Penelope Moore – Prof Moore is a Reader and DST/NRF South African Research Chair of Virus-Host Dynamics at Wits and the National Institute for Communicable Diseases, and Research Associate at CAPRISA, UKZN.

Prof Robert Morrell – Prof Morrell is Director, Next Generation Professoriate and Manager, New Generation of Academics Programme, Office of the Vice-Chancellor, UCT.

Prof Vinasan Naidoo – Prof Naidoo is the Deputy Dean for Research in the Faculty of Veterinary Sciences at UP.

Prof Dion Nkomo – Prof Nkomo is Associate Professor in African Languages at RU.

Prof Sarah Nuttall – Prof Nuttall is Director of the Institute for Social and Economic Research, Wits.

Prof Paul O' Brien – Prof O'Brien is Professor at the Schools of Chemistry and of Materials at the University of Manchester.

Prof Anthony Okoh – Prof Okoh is Deputy Dean (Research and Internationalisation) of the Faculty of Science and Agriculture at the University of Fort Hare.

Prof Vishnu Padayachee – Prof Padayachee is Distinguished Professor and Derek Schrier and Cecily Cameron Chair in Development Economics, School of Economic and Business Sciences, Wits.

Prof Bhekizizwe Peterson – Prof Peterson is Professor and Head of African Literature at Wits.

Prof Sharon Prince – Prof Prince is Professor, Head of the Division of Cell Biology and Deputy Head of the Department of Human Biology at the UCT.

Prof Maano Ramutsindela – Prof Ramutsindela is Deputy Dean, Faculty of Science, UCT.

Prof Vasu Reddy – Prof Reddy is Professor and Dean of the Faculty of Humanities, UP.

Prof Aletta (Alta) Schutte – Prof Schutte is Professor of Physiology and DST/NRF South African Research Chair in the Early Detection and Prevention of Cardiovascular Disease in South Africa – hosted by the Hypertension in Africa Research Team (HART) at the NWU.

Prof Marius Smuts – Prof Smuts is Professor of Nutrition and Director of the Centre of Excellence in Nutrition at the NWU.

Prof Leslie Swartz – Prof Swartz is Distinguished Professor at the Psychology Department at the SU.

Prof Mark Tomlinson – Prof Tomlinson is Professor in Psychology at the SU.

Prof Imraan Valodia – Prof Valodia is the Dean of the Faculty of Commerce, Management and Law at Wits.

Dr Heidi van Rooyen – Dr Van Rooyen is the Executive Director of the Human and Social Development Programme at the Human Sciences Research Council (HSRC) in South Africa.

Prof Christopher Vaughan – Prof Vaughan is Emeritus Professor of Biomedical Engineering, UCT and Extraordinary Professor in the Faculty of Health Sciences, SU.

Prof Frans Viljoen – Prof Viljoen is a Professor in Law at UP, and Director of the Centre for Human Rights.

Prof Cheryl Walker – Prof Walker is DST/NRF South African Research Chair in the Sociology of Land, Environment and Sustainable Development, SU.

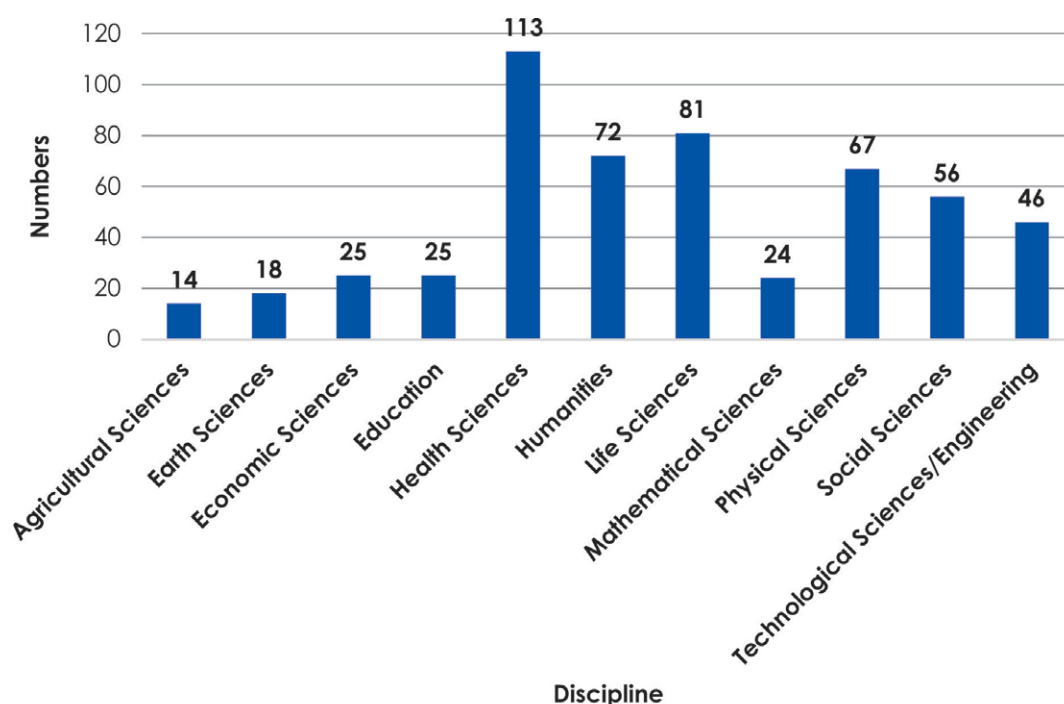
Prof Qing-Guo Wang – Prof Wang is Distinguished Professor in the Institute for Intelligent Systems, Faculty of Engineering and the Built Environment, UJ.

Prof Robert Wilkinson – Prof Wilkinson is an Honorary Professor at the UCT where he serves as Director of the Wellcome Centre for Clinical Infectious Disease Research in Africa.

Prof Taryn Young – Prof Young is Professor, Head of Division of Epidemiology and Biostatistics, and Director of the Centre for Evidence-based Health Care at SU's Faculty of Medicine and Health Sciences.

ASSAf Membership now stands at 541. The full list of ASSAf Members is available on www.assaf.org.za.

ASSAf Membership by Discipline 2018 (n=541)



Fifty-four Members who achieved top honours in South Africa are profiled in a commemorative book entitled *Legends of South African Science* which was produced as part of the ASSAf 20-year celebrations in 2016. The book was launched in July 2017.

2.3.2 National Liaison

Strategic Partnerships

ASSAf's strategic national partners include organisations in the NSI, particularly science councils and industry. ASSAf is the secretariat for COHORT and has a memorandum of understanding (MoU) with NACI. Engagement with Parliament is a focus of activity, primarily to ensure that ASSAf's many and varied study outputs are brought to the attention of the country's policymakers.

Scholarly Lectures

The key objective is to contribute to scholarly activity and discourse through, amongst others, the Distinguished Visiting Scholar Programme and Regional Scholarly Lectures.

Distinguished Visiting Scholar Programme

The Academy annually brings outstanding international scholars to South Africa for approximately two weeks for a nationwide lecture tour. The purpose is to promote scholarly activity and to contribute towards strengthening scientific endeavour in South Africa.

ASSAf hosted Prof Michael Levitt as the 2017/18 Distinguished Visiting Scholar from 11 to 24 November 2017. Born in South Africa in 1947, Prof Levitt was awarded the 2013 Nobel Prize for Chemistry (shared with Martin Karplus and Arieh Warshel). He conducted eight public lectures at several universities around the country.

Regional Scholarly Lectures

ASSAf co-hosts scholarly lectures that are open to the public. The most successful regular series are those co-hosted with the Royal Society of South Africa in Cape Town. ASSAf also partners with other organisations (e.g. The SAAE and the *Akademie vir Wetenskap en Kuns*) as and when appropriate, to host scholarly lectures and to publicise such lectures as widely as possible.

ASSAf continued to collaborate with the Royal Society of South Africa by co-hosting monthly scientific talks. The following lectures were held in Cape Town:

- 17 May 2017 – The White Rhinoceros. A Problem in Conservation. Emeritus Prof Eric Harley, Faculty of Health Sciences, UCT.
- 14 June 2017– From Here to the Edge of the Observable Universe. Dr Robin Catchpole, Institute of Astronomy at Cambridge and Retired Senior Astronomer at The Royal Observatory at Greenwich.
- 16 August 2017 – Oceans Economies, Governance and the Need for a Blue Economy. Professor Ken Findlay, Research Chair: Oceans Economy, Cape Peninsula University of Technology.
- 13 September 2017– From North Sea to Antarctica: Let's Discover a World of New Compounds. Dr Donatella de Pascale, Institute of Protein Biochemistry, National Research Council in Naples, Italy.
- 18 October 2017 – Preparing for the Use of Medicinal Marijuana in South Africa. Dr Vash Mungal-Singh, Lancet Laboratories.
- 22 November 2017 – The Art and Acience of Winemaking. Dr John Moore, Senior Researcher in Grapevine Biochemistry and Biotechnology, Institute for Wine Biotechnology, Department of Viticulture and Oenology, SU.
- 21 February 2018 – Mirror! Mirror! On the Wall...: Reflections on a Decade of Skin Research. Professor Lester Davids, Department of Medical Biosciences at the University of the Western Cape (UWC).
- 14 March 2018 - Ancient Sex and the Production of Human Diversity. Professor Rebecca Ackermann, Department of Archaeology at UCT.

Embassy Lecture Series

The Academy had the opportunity to partner with the Embassy of the United States of America (USA) in South Africa to co-host a panel discussion by experts on Ocean Pollution: Impact and Solutions with special guest speaker, USA marine waste expert, Dr Jenna Jambeck. The event was co-hosted with UKZN and was held on 18 July 2017 on UKZN's Westville Campus.

Dr Jenna Jambeck, an Associate Professor in the College of Engineering at the University of Georgia, has been conducting research on solid waste issues for 20 years with related projects on marine debris since 2001 and recently led an international scientific study on marine plastic pollution.

The second panel discussion titled Storytelling and Narrative in Science Education and Communication with special guest speaker research scientist, high-school teacher and digital content author, Dr Tyler DeWitt was hosted. The objective of the panel discussion was to provide a platform for scientists to share various ways in which they make science, technology, engineering and mathematics (STEM) accessible and understandable to policymakers, young emerging scientists and the public; taking into consideration that the fundamental role of science is for the service of society. The event was held on 17 October 2017 at the NRF.

Presidential Round Tables

The first in a series of round-table discussions, titled University Rankings: Helpful or Harmful, was hosted on 7 February 2018 at SU. It was moderated by ASSAf President, Prof Jonathan Jansen. These discussions focus on thought-provoking and sometimes controversial issues facing the academic and higher education community in the country.

University rankings provide insights into how universities compare globally. They place a major emphasis on research productivity and impact, the ability to attract research grants, the quality of staffing, internationalisation and perceptions of the quality of graduates by the international community.

Science and Business

ASSAf has embarked on a strategy to enhance dialogue and cooperation between science, business and society. Businesses in the country have been engaged to attend a forum where science matters and their role therein will be discussed. The President of ASSAf, Prof Jonathan Jansen, will facilitate this forum in 2018.

Innovation for Inclusive Development (IID) Policy Dialogues

The purpose of the IID seminars is to demonstrate how innovative technology solutions may be used to improve the capacity of the state to deliver and improve access to basic services, and thereby advance local economic development. The practical knowledge and insights generated from these seminars can be used as tools to support evidence-based policy and decision-making to enhance service delivery, and building capacity in relevant state institutions and communities.

The first of the three IID seminars was hosted on 27 February 2018. It was supported by the DST and the broader landscape of education and technology as part of the South African learning landscape was discussed. The seminar was attended by various roleplayers, including entrepreneurs, government officials and academics.

The second and the third IID seminars will be hosted in the second quarter of 2018.

Annual ASSAf Humanities Lecture

The Annual ASSAf Humanities Lecture was held on 26 October 2017 in Pretoria. The purpose of the event is to promote humanities in the country.

The lecture entitled Steve Biko's "Envisioned Self" and the Makings of a South African was delivered by Prof Njabulo Ndebele.

Prof Ndebele is Chairman of The Nelson Mandela Rhodes Foundation. He holds a PhD in Creative Writing from the University of Denver. His leadership in South African higher education has seen him serve as DVC at the UWC, VC of the University of the North (now Limpopo) and two terms as VC of the UCT. He is currently Chancellor of the UJ.

Prizes and Awards

Central to the purpose of an Academy is the recognition and reward of outstanding contributions to the advancement of knowledge and to society. While ASSAf has embraced the working Academy model, the value of celebrating scholarly achievements speaks directly to the Academy's mandate.

ASSAf has instituted prestigious Science-for-Society Gold Medal awards to recognise outstanding scientific achievements in the service of society. Each year up to two Science-for-Society Gold Medals are awarded. Provision is made for awarding, on an irregular basis, a Gold Medal for Outstanding Meritorious Service, of which only two have been awarded to date.

In 2017, the Science-for-Society Gold Medal was presented to Dr Bernie Fanaroff who retired as Director of the SKA project in 2015. He has held this position since 2003 and led a team who succeeded in bringing the world's largest radio telescope to the country. Dr Fanaroff received his PhD in radio-astronomy from Cambridge University in 1974. One of his papers, on the classification of radio galaxies and quasars, has been cited 1 849 times and is known as the Fanaroff-Riley classification. Apart from being awarded Honorary Doctorates from six South African universities, Dr Fanaroff was named Ambassador of the Year by the Cape Chamber of Business in 2012, and in 2014 was awarded the Order of Mapungubwe.

2.3.3 International Liaison

The purpose of this sub-programme is to establish, strengthen and sustain productive collaborations with African and overseas academies of science and like-minded organisations, with a view to enhancing capacity in S&T, and its application within the NSI. The programme strengthens and enhances interactions with relevant stakeholders in key national government departments, other public entities of the DST, for example the NRF and policymakers in government, whose work has an international focus. The programme also engages in science diplomacy.

Strategic Partnerships

Strategic partners of ASSAf include the Global Network of Science Academies, which in 2016 was renamed the InterAcademy Partnership (IAP). The IAP is based in Trieste, Italy. ASSAf plays a major role in the Executive Committee of this body. ASSAf is also a member of the IAP for Health Executive Committee and through this body has made input into various policies and statements of global impact.

TWAS is another strategic partner of ASSAf and with effect from 2015, ASSAf has hosted the TWAS ROSSA. During the 2017/2018 financial year, TWAS ROSSA promoted the goals of TWAS in the region, which included nominating TWAS Fellows and Young Affiliates; hosting of scientific meetings, awards and prizes, as well as supporting young scientists' activities.

A third strategic partner is ICSU ROA, which is hosted by ASSAf. During the period under review there was close alignment between the goals and activities of ASSAf and ICSU ROA. This was particularly so in terms of African collaboration, thematic areas of interest and the promotion of young scientists and gender in STI. All of these areas presented significant opportunities for synergistic partnerships on activities.

ASSAf played a role in engagements with key strategic partners such as the World Science Forum, and the BRICS academies of science, as well as through engagements with the PAP Committee on Science and Technology, the EU, the Southern African Development Community (SADC) Science Desk, UNESCO and the African Union (AU), among other multilateral organisations as key partners.

ASSAf also participates actively in the G-Science grouping of academies, which consists of academies from the G20 countries.

InterAcademy Partnership

ASSAf continues to serve in the IAP for Health Executive Committee, with Prof Karen Hofman who replaced Prof William Pick as the ASSAf representative. The Academy responded to the call for Young Physician Leaders through the Health Standing Committee. Prof Raymond Durrheim of Wits was nominated by ASSAf to represent the Academy in the IAP Working Group on Disaster Risk Reduction, while Prof Bongani Mayosi was nominated to represent the Academy at the workshop on Strengthening Clinical Research in Low to Medium-Income Countries that was held in London from 3 – 4 July 2017. ASSAf also sent a response to a survey on the role of science academies in the SDGs as requested by IAP for Research.

Prof Brenda Wingfield, ASSAf Vice-President, was nominated to represent ASSAf on the IAP Executive Committee. Prof Wingfield replaces Prof Daya Reddy in this committee where SA represents developing countries.

Prof Wingfield represented the Academy at the IAP for Health Executive Committee meeting in Berlin. The meeting was hosted by the German National Academy of Sciences Leopoldina.

ASSAf participated in the production and endorsement of several statements produced by the IAP. The statements were on Climate Change and Education and Disaster Risk Reduction in Science and Technology. NASAC, in collaboration with the German Academy of Sciences Leopoldina and the IAP, developed the regional report on Food Nutrition and Security in Africa with the title: Opportunities and Challenges for Research on Food and Nutrition Security and Agriculture in Africa. ASSAf also endorsed the Statement on Dementia entitled Call to Take Action to Tackle the Burden of Dementia released by the IAP on Health. The Academy was represented by Dr Laila Asmal of SU in the Working Group that produced this global statement.

Professor Crick Lund of UCT was nominated to participate in the IAP Committee on Mental Health in Low and Middle-Income Countries Working Group.

Professor Soraya Seedat was nominated to the IAP Working Group for Health Experts on Trauma entitled a Call to Declare Trauma as a Disease.

ASSAf partnered in the African Diaspora Programme with IAP. The IAP was funded by the Carnegie Foundation to encourage African scientists in the diaspora to go back to their countries and support science for a short period. ASSAf provided matching funding.

BRICS Academies of Science

With South Africa chairing BRICS in 2018, ASSAf has been engaged in discussions with the DST regarding the creation of the BRICS Academies Forum.

Commonwealth Science Conference

Prof Himla Soodyall, General Secretary of the ASSAf Council, represented the ASSAf President at the Commonwealth Science Conference 2017 held in Singapore from 13 – 16 June 2017. Six young scientists nominated by ASSAf were among some 400 researchers from the Commonwealth's scientific community to discuss pressing global issues. Issues such as climate change, future technologies, energy and carbon storage and medical research came under the spotlight. The selected students were: Heinrich Badenhorst (UP); Gina Leisching (SU); Savania Nagiah (UKZN); Blake Balcomb (SU); Usisipho Feleni (UWC) and Osmond Mlonyeni (UP) who was also a speaker in the student session.

TWAS

ASSAf continued to maintain a close relationship with TWAS. The 27th TWAS General Meeting was held from 14 to 17 November 2016 in Kigali, Rwanda, with the theme Innovation for Sustainability. Rwanda is globally recognised for its ambitious efforts to drive economic development and human prosperity through science, education and technology, and it has emerged as an African leader in science policy.

Fifty-five new TWAS Fellows were elected to membership on 26 January 2018, bringing the total TWAS membership to 1 228. Sixteen new members are women – an unprecedented 29% of the new class. The South Africans were Prof Felix Dapare Dakora from the Tshwane University of Technology (TUT); Prof Shabir Ahmed Madhi from the National Institute for Communicable Diseases, Johannesburg; Prof Robert John Scholes from Wits; and Professor Jennifer Ann Thomson from UCT. The new TWAS Fellows will be inaugurated at the academy's 28th General Assembly in 2018.

TWAS ROSSA

As host of TWAS ROSSA, several activities were undertaken and calls disseminated.

TWAS ROSSA endorsed five candidates as TWAS Young Affiliates to serve for a period of five years. The candidates are Dr Kolawole Valere Salako (Benin), Dr Emile Rugamika Chimusa (Congo), Dr Mariamawit Yonathan Yeshak (Ethiopia), Dr Marian Asantewah Nkansah (Ghana) and Dr Dalia Saad (Sudan).

The third cohort of Young Affiliates was formally inducted into the programme during the Science Forum South Africa (SfSA) on 8 December 2017. The new Affiliates were inaugurated in the presence of Minister Naledi Pandor and TWAS representatives, Prof Moctar Toure, Prof Mohamed Hassan and Prof Romain Murenzi.

TWAS ROSSA nominated ten young scientists to attend the TWAS Regional Office for Central & South Asia (TWAS ROCASA) Young Scientists' Conference that was held in India from 7 – 9 September 2017. The theme for the conference was Infectious Diseases: Biology to Intervention Strategies, and the nominated young scientists were sponsored by TWAS ROCASA.

TWAS ROSSA sponsored four Young Affiliates from Benin, Cameroon, Ghana and Mauritius to attend the TYAN Inaugural meeting which was held in Rio de Janeiro, Brazil from 22 – 24 August 2017. The meeting was hosted in collaboration with TWAS, the TWAS Regional Office of Latin America and the Caribbean and the Brazilian Academy of Sciences. The conference was held to strengthen the interaction among Young Affiliates and to provide a new platform for young scientists to contribute their knowledge and skills to the development of TWAS and S&T in developing countries. An additional two affiliates were sponsored by ICSU ROA.

The TWAS Regional Prize was awarded to Prof Wilfred Mbacham (Cameroon) for contributions to the development of new strategies that serve the popularisation of science and technology in the developing world. The TWAS ROSSA Regional Young Scientists' Prize was awarded to Dr Cletos Mapiye (Zimbabwe) for his significant contributions to research, development and capacity building to improve sustainability of food and agricultural systems, food security and poverty reduction in the developing world.

In 2017, TWAS ROSSA also celebrated a partnership announcement of TWAS and Prof Quarraisha Abdool Karim (ASSAf Member and TWAS Fellow) for a new prize designed to honour women scientists in low-income African countries for achievements in biological sciences. The prize is named after TWAS Fellow Quarraisha Abdool Karim, who is generously offering a cash award of USD5 000. The initial prize was awarded to Barbara Burmen, an epidemiologist from Kenya for innovative approaches to HIV-testing in the Kenyan population, and for personal and professional mentorship activity with younger colleagues.

TWAS ROSSA hosted its first panel session at the 2017 SfSA, from 7 – 8 December 2017. The panellists were, Prof Archana Bhaw-Luximon (TWAS Young Affiliate), Prof Collet Dandara (TWAS Young Affiliate), Prof Quarraisha Abdool Karim (TWAS Fellow) and Prof Moctar Toure (TWAS Fellow and Vice-President Africa region). Prof Robin Crewe (TWAS Fellow) was the facilitator of the session. The theme of the session was Assessment of the Vitality and Effectiveness of TWAS' Young Scientists' Opportunities in sub-Saharan Africa.

2.3.4 Overseas Collaborations

Air Pollution and Health Symposium

ASSAf, the German National Academy of Sciences Leopoldina in cooperation with the IUF – Leibniz Research Institute for Environmental Medicine hosted a symposium on Air Pollution and Health: New

Research Perspectives for a Growing Global Crisis. The symposium was held on 7 and 8 November 2017 at the House of the University in Dusseldorf, Germany.

The symposium, which forms part of the ASSAf-Leopoldina joint series on environment and health, was the second since the last event that was held in South Africa in 2015. The aim of the 2017 symposium was to explore various topics in the area of air pollution and health, such as indoor air quality; black carbon; and, pollution and health effects. In addition, the symposium was aimed at fostering international exchange and collaborations among scientists.

The event was attended by senior research scientists from Germany, BRICS countries and representatives from the World Health Organisation (WHO). ASSAf nominated four scientists to represent South Africa at this event. The researchers were Professor Angela Mathee (South African Medical Research Council (MRC)), Professor Harold Annegarn (Cape Peninsula University of Technology), Professor Rajen Naidoo (UKZN) and Professor Caradee Wright (MRC). The symposium was coordinated by Professor Caradee Wright and Professor Jean Krutmann from the IUF – Leibniz Research Institute for Environmental Medicine, who represented ASSAf and Leopoldina respectively.

11th Session of the South Africa-Russia Joint Commission on Science and Technology

ASSAf participated in the 11th Session of the South Africa-Russia Joint Commission on Science and Technology. A meeting was held with the Russian Academy of Sciences secretariat, Ms Olga Glukhovtseva, Ms Daria Chernoiwanova, and Mr Sergei Isaev. The purpose of the meeting was to discuss the state of the cooperation between ASSAf and the Russian academy as it relates to the existing MoU and propose future collaborative projects between the two academies.

ESASTAP 2020

The second Strengthening of Technology, Research and Innovation between Europe and South Africa (ESASTAP) Horizon 2020 (H2020) partners' project meeting was held on 8 and 9 May 2017 in Pretoria. The aim of the meeting was to deliberate on the progress made by all partners on the milestones that were set for the first year of the project. The meeting was attended by representatives from ASSAf, DST, NRF, Technology Innovation Agency (TIA), the Foundation for Research and Technology Hellas, *Agenzia per la Promozione Della Ricerca Europea*, *Deutsches Zentrum Fuer Luft-Und Raumfahrt Ev*, *Institut De Recherche Pour le Developpement*, *Norges Forskningsrad*, and *Zentrum Fuer Soziale Innovation, Gesellschaft mit beschränkter Haftung*.

ASSAf, which is co-leading Work Package 1 with DST, completed the first survey on the South Africa's participation in the H2020 Programme of the EU. The survey, which forms part of a comprehensive analysis of South Africa's participation in H2020, was undertaken in April 2017 for the second round in the fourth quarter of the 2017/18 financial year. The larger study will produce recommendations that will be used to guide South Africa's participation in future EU partnerships.

The ESASTAP H2020 consortium hosted an Information Day session on 6 December 2017 as a side-event preceding the events of the SFSA 2017. The session served as an opportunity to learn more about the programme.

Science Business Society Dialogue Conference

ASSAf, in collaboration with Leopoldina, supported by the German Federal Ministry of Education and Research hosted an international conference on Sustainable Use of Abandoned Mines in the SADC region from 28 to 30 November 2017.

The conference explored innovative approaches towards ensuring sustainable use of abandoned mines which, as legacy sites, frequently place a significant long-term economic and ecological burden on affected societies and environments. A particular focus was placed on the use of closed mines to store and produce renewable energy and other innovative ways of remediation through turning potential liabilities into future assets.

The conference was attended by delegates representing science, business, civil society and policy-makers, especially from the SADC region but also from other mining nations in Africa, Europe, Australia, China and the Americas. A conference statement was released.

2.3.5 African Collaboration

A major thrust of ASSAf's international liaison is focused on African cooperation. It includes building and maintaining relationships with African academies of science, of which there are 22, and supporting NASAC.

ASSAf has MoUs with academies in Benin, Mauritius, Nigeria and Uganda and partners with these and other academies on both a bilateral and multilateral level.

Cooperation within Africa is implemented under NASAC's Strategic Plan and aims, *inter alia*, to strengthen science academies in Africa. ASSAf has a critical role to play as it is one of the strongest and better resourced academies in Africa.

Specific objectives for ASSAf are to focus on academy development in the SADC region and to strengthen bilateral agreements with academies in countries in Africa where the DST already has bilateral agreements. ASSAf also engages with the STI hub of the New Partnership for Africa's Development in enabling academies in the continent to participate in the implementation of the Science, Technology and Innovation Strategy for Africa and the PAP Committee on Science and Technology and the African Union.

SADC Ministers Meeting

ASSAf EO, Prof Roseanne Diab, presented on the Value of Science Academies at the SADC Joint Meeting of Ministers Responsible for Education and Training, Science Technology and Innovation held at the Royal Swazi Spa in Ezulwini, Swaziland on 20 June 2017. There were 50 registered delegates from 15 SADC member states. The presentation focused on the importance, role and need for funding and other support for science academies within the SADC region. A record of decision was signed by the SADC Ministers of Science and Education which urged member states to support academies to function effectively.

Science Academies in the NSI

Science academies in the SADC region hosted a half-day workshop on the Role of Science Academies in the NSI on 21 June as a side-event to the SADC Joint Meeting of Ministers. ASSAf coordinated the workshop which was attended by over 90 participants comprising SADC senior officials and stakeholders from within Swaziland. The main objective of the workshop was to present on the value proposition of science academies to secure government funding for science academies in the SADC region.

American Association for the Advancement of Science Annual Meeting

The American Association for the Advancement of Science (AAAS) Annual Meeting is a widely reported global science gathering at which AAAS hosts its members and international partners annually in different cities of the United States. This year's meeting was held from 15 to 19 February 2018 at the Austin Convention Centre in Texas under the theme Advancing Science: Discovery to Application. This theme was apt as in changing times it is critical that academia, government, and industry continue to work together to move ideas into innovative advancements.

ASSAf was represented at the annual meeting by Ms Phyllis Kalele, Senior Liaison Officer and Mr Tsepo Majake, Education Liaison Officer. At the meeting, Ms Kalele was a panellist on the round-table discussion on the Science Diplomacy Education Network. The network was launched in 2017 by the AAAS Centre for Science Diplomacy as a platform to bring together educators and students from across the world interested in formal and informal science diplomacy education and training. The network aims to advance the intellectual and practical foundations of educating about science diplomacy and support its expansion through the exchange of resources and ideas. Participation at this annual meeting

was part of ASSAf's efforts in strengthening its relationship with the AAAS particularly in the area of science diplomacy.

ASSAf, in partnership with the AAAS and TWAS, will be hosting the first science diplomacy training workshop in Africa from 21 to 25 May 2018. The training workshop is designed for young scientists (below the age of 40) living and working in sub-Saharan Africa whose research and wider engagement have brought them into the international policymaking arena, policymakers and diplomats interested in some of the central science-based themes that might influence their work, representatives from NGOs and other sectors working at the science-diplomacy interface.

International Forum on Women and Sustainable Development in Africa

NASAC, in collaboration with the Tanzania Academy of Sciences and the French Academy of Sciences, hosted the international forum on women and sustainable development. The forum was hosted in partnership with the Bill and Melinda Gates Foundation, the French Development Agency, the French Institute for Development Research, the Sanofi Espoir Foundation and the IAP. The forum was held from 8 to 10 March 2018 in Dar es Salaam, Tanzania. The forum coincided with International Women's Day which is celebrated on 8 March and was formally opened by the Minister of Education, Science and Technology of the United Republic of Tanzania, Professor Joyce Ndalichako. At the conclusion of the forum a declaration by science academies was adopted by all participants.

ASSAf was represented at the forum by Prof Roseanne Diab, Mr Stanley Maphosa, Ms Phyllis Kalele, Prof Igle Gledhill, Prof Barney Pityana and Prof Robin Crewe who participated and supported NASAC.

ASSAf and Rwanda Academy of Sciences Bilateral Meeting

On 23 March 2018, ASSAf represented by Prof Roseanne Diab, Ms Phyllis Kalele and Mr Stanley Maphosa attended a bilateral meeting with the Rwanda Academy of Sciences (RAS) in Kigali. RAS was represented at the meeting by amongst others its President Prof Manasse Mbonye, Vice-President Dr Christine Gacingirwa, and Secretary-General Dr Ignace Gatere. The main focus of the meeting was to deliberate on how ASSAf could support RAS to become operational and conduct activities since it was established in November 2016. Pertinent Academy operational activities were shared and included: Academy staffing, Membership in regional and global bodies and fundraising opportunities. Other key areas that were discussed included gender mainstreaming in the academy activities, collaboration in activities, such as workshops and consensus studies, raising awareness on TWAS ROSSA in Rwanda, reaching out to young scientists, and sharing of experiences on school outreach activities, i.e. Quest and SciFest. ASSAf will arrange a meeting between NASAC and RAS to review the academy's organisational documents in preparation for an application by RAS to join NASAC. An objective identified at the bilateral meeting is that RAS will apply for membership to NASAC to start benefitting from interactions.

Next Einstein Forum Global Gathering

The Next Einstein Forum (NEF) is a platform that connects science, society and policy in Africa and the rest of the world with the goal of leveraging science for human development globally. The NEF believes that Africa's contributions to the global scientific community are critical for global progress underpinned by the youth who are the driving force for Africa's scientific renaissance. The NEF Global Gathering was held from 26 to 28 March 2018 in Kigali. The NEF is an initiative of the African Institute for Mathematical Sciences (AIMS) in partnership with Robert Bosch Stiftung. This year's meeting was attended by 50% of participants under 42 years of age and at least 40% women.

During the forum, it was announced that the NEF will partner with the Gender Summit Africa in future. The 3rd global gathering will be held in 2020 in Nairobi, Kenya.

A new journal, *Scientific African*, was launched. It will be a pan-African, peer reviewed, open access publishing journal, dedicated to boosting the global reach and impact of research by Africans. It is intended to give a global platform to African science and increases the impact and recognition of African scientists in both the African and international scientific communities. The journal will publish peer-reviewed original research from all scientific disciplines, focused on issues of key importance to Africa.

AMASA 13

The Nigerian Academy of Science (NAS) hosted the 13th Annual Meeting of African Science Academies (AMASA 13) in Nigeria on 16 and 17 November 2017.

A Learning Collaborative with a focus on science advice was held on 13 and 14 November 2017.

The theme for AMASA 13 was Science, Technology, and Innovation: Education and Manpower Development in Africa. Science education and manpower development can accelerate Africa's growth to meet globally acceptable standards and to initiate a long-term engagement plan for African science academies, their respective governments, and policymakers to work towards a new era of STI development for a more sustainable and self-reliant Africa.

ASSAf was represented at the meeting by Prof Barney Pitso, ASSAf Vice-President, who spoke on Science Education in Southern Africa: Successes, Challenges and Prospects.

The next meeting (AMASA 14) will be hosted by the Benin National Academy of Sciences, Arts and Letters from 27 to 30 November 2018.

Pan-African Parliament

The PAP is an organ of the AU aimed at ensuring participation of African people in the development and economic integration of the continent. STI have been recognised as critical for development and are regarded as one of the main pillars of creating sustainability, prosperity and economic wealth. Cross-cutting in nature, STI contribute to the achievement of all socio-economic development objectives, including the UN SDGs and the AU's Agenda 2063.

On 7 August 2017, ASSAf presented on Education, Culture, Tourism and Human Resources; the title of the presentation was Evidence-based Science Advice: A Selection of Case Studies Relevant for Africa and on the African Open Science Platform. The committee recommended that the presentations be made to all PAP parliamentarians during the annual plenary session of the PAP.

Network of African Science Academies

With funding from the German Academy of Sciences, Leopoldina, ASSAf has continued to collaborate with NASAC. The collaboration is through the hosting of a conference on sustainable cities in Africa which will be hosted by the Ghana Academy of Arts and Sciences and Leopoldina. ASSAf is assisting in the compilation of the programme, identification of speakers and compilation of case study African cities.

2.3.6 Young Scientists' Activities

Since 2010, ASSAf has hosted an Annual Young Scientists' Conference, aligned to the International Year themes of the UN or AU, as part of its commitment to supporting the development of young scientists.

In its quest to support the growth of SAYAS, ASSAf continues to provide secretariat support to the young academy. In 2017/18, ASSAf set aside budget and staff time for joint activities with SAYAS and assisted them to raise their profile with the Global Young Academy (GYA) and with African science academies, and created opportunities for SAYAS members to participate in ASSAf's standing committees and study panels.

ASSAf also actively supported the nomination of young scientists for awards and leadership opportunities and acts as the implementing agency for some of these. These included the following:

- TWAS Young Affiliates
- TWAS Regional Young Scientist Prize
- AU-TWAS National Young Scientist Awards
- Young Physician Leaders Programme
- Lindau Nobel Laureates Programme

Young Scientists' Conference

The 7th Annual Young Scientists' Conference was held on 19 July 2017 and jointly hosted by ASSAf and SAYAS. The conference was held in Boksburg and the theme was Young Scientists' Role in Science Advice. TWAS ROSSA and OWSD-South African National Chapter (SANC) were additional partners.

This multilateral conference provided a platform for scientific exchange among senior and young scientists in the area of harnessing the demographic dividend through investments made in young scientists. There is a growing movement internationally to bring together science advisors to share best practices and form a network to deal with global challenges, such as food security and climate change. Science is also at the heart of the UN SDGs. However, integrating the best science into the plans of government and others working towards the SDGs remains a challenge.

Specific themes that were deliberated upon included the Role of Young Scientists in National Strategies to Achieve the SDGs; Application of a Gender Lens in Addressing the SDGs; and Building Scientific Capacity in Young Scientists to Advance Science Policy.

The keynote address was delivered by Dr Adrian Tiplady, General Manager of Strategy, SKA. The conference dinner was sponsored by the New Zealand High Commission in South Africa with inspirational talks from Prof Refilwe Phaswana-Mafuya, NWU and ASSAf Council Member and Mr Mike Burrell, New Zealand High Commissioner to South Africa.

Funding support for the conference was received from the DST, TWAS ROSSA, the OWSD-SANC, NRF and the New Zealand High Commission to South Africa.

Lindau Nobel Laureate Meetings

ASSAf, as academic partner, signed a three-year MoU with the Lindau Foundation to enable the participation of young scientists in the annual Lindau Nobel Laureate meetings held in Lindau, Germany. The programme is funded by the DST.

ASSAf nominated five young scientists to attend the 67th Lindau Nobel Laureate Meeting on Chemistry from 25 – 30 June 2017 in Lindau. They were Mr Frederick Malan, UP; Dr Hlamulo Makelane, UWC; Ms Funeka Nkosi, UCT/ Council for Scientific and Industrial Research (CSIR); Ms Retha Peach, NWU; Dr Mark Williams-Wynn, UKZN.

Mr Paul Kennedy accompanied the group as science communicator/journalist.

One young South African economist represented the country at the prestigious 6th Lindau Nobel Laureate Meeting on Economic Sciences held from 22 – 26 August 2017 in Lindau, Germany. Ms Rozanne Bester, MCom student in Economics at the UP was nominated by ASSAf. Mr Stanley Maphosa, ASSAf's International Liaison Manager accompanied Ms Bester.

Six young female South African scientists were nominated by ASSAf to attend the 68th Lindau Nobel Laureate Meeting on Physiology and Medicine later this year in Lindau, Germany. The meeting will take place from 24 to 29 June 2018.

2.3.7 Gender and STI Activities

All gender-related activities in ASSAf are coordinated by the OWSD-SANC, which is hosted by ASSAf. ASSAf also hosts the focal point for GenderInSITE for the southern African region. GenderInSITE is a global initiative to raise the awareness of decision-makers on the gender and SITE dimensions of development, aimed at both men and women.

Forty-nine OWSD-SANC members were nominated during the year under review. The nominations can be viewed on the OWSD international website: <http://www.owsd.net/user/register>. The Executive Committee of the OWSD-SANC continued to meet and provide oversight to ASSAf's gender and STI activities.

The OWSD International Board was hosted during the SFSa by the Minister of Science and Technology in Pretoria in December 2017.

Regional Gender Monitoring and SADC Gender Protocol Workshop

ASSAf, in collaboration with the Botswana Academy of Science, the Botswana Institute for Technology, Research and Innovation and GenderInSITE Southern Africa hosted a workshop titled Regional Workshop on Gender Monitoring in STI and the SADC Gender Protocol from 5 – 6 April 2017. The purpose was to determine progress in gender monitoring and evaluation in STI. Ten out of the 15 SADC member states were represented at the event; these included Botswana, Swaziland, Malawi, Mozambique, Lesotho, Namibia, South Africa, Zambia, Angola and Zimbabwe.

Consultative Workshop for Industry

ASSAf, in collaboration with GenderInSITE hosted a consultative workshop on 20 April 2017, on Assessing the Employability and Demand for Postgraduate Engineering Students. The purpose of the workshop was to understand the demand and employability of engineering postgraduate students by industry. The workshop proceedings will contribute towards the broader ASSAf consensus study seeking to assist the DST with sufficient and detailed information to be able to assess the state of postgraduate training in engineering in South Africa with respect to possible systemic challenges or shortcomings. GenderInSITE invited some participants to ensure the gender lens can be taken into consideration during the production of the final report.

Research in SITE and Gender Round Table

The Durban University of Technology (DUT) co-hosted the Research in Science, Innovation, Technology and Engineering Gender Round Table with OWSD-SANC and SAYAS from 15 – 16 May 2017 in Durban. Recommendations and outcomes are being included in the report for the OWSD-SAYAS-DUT initiative to be shared with the network and strengthen the mentorship programmes for women in SITE and sustainable development.

GenderInSITE Elsevier Foundation Thematic Workshop

GenderInSITE partnered with ASSAf, TIA, Elsevier Foundation, and The Swedish International Development Cooperation Agency to host a workshop from 4 – 6 September 2017 in Pretoria.

The workshop, which forms part of a series of the GenderInSITE Elsevier Foundation thematic workshops, explored the role of innovation as a key tool to effectively aid in the implementation of the SDGs – this included the application of the gender lens in research and all activities that are conducted within science and innovation.

The objective of the workshop was to explore the role of gender in innovation as a key issue for developing countries and to identify the most promising practices and their impact in the lives of both men and women. The expected output from the workshop will include concrete recommendations in support of policy development, as well as a proceedings report. The keynote address was given by a leading expert on gendered innovation, Prof Londa Schiebinger from Stanford University.

OWSD Fellowship Mentorship Programme

The mentorship programme for OWSD fellowship holders who are currently based in South Africa was launched at several universities where fellowship holders are located. Currently, there are 81 active fellowship holders studying in South Africa. The first OWSD regional meeting took place on 14 November 2017 at UCT.

OWSD Regional Meeting

The OWSD regional meeting on 14 November 2017 at UCT brought together both OWSD fellowship holders and members that are based in the Western Cape province. The meeting served as a pilot regional meeting.

Annual Meeting for African Science Academies 13

ASSAf, in collaboration with the OWSD-SANC and GenderInSITE, sponsored a session during the Nigerian Academy of Science 40th Anniversary and the AMASA13 that took place from 13 – 16 November 2017 in Nigeria. The theme for the 2017 AMASA was Science, Technology & Innovation: Education & Manpower Development in Africa.

The sponsored session titled Safeguarding Africa's Scientific Future through STI Education, especially Women and Young Scientists was aimed at discussing ways of ensuring that Africa remains relevant in global science and to also discuss strategies for training a generation of scientists, especially female and young scientists, capable of competing with counterparts in the developed world.

Training Workshop

The OWSD-SANC in collaboration with African Women in Agricultural Research and Development (AWARD), ASSAf, GenderInSITE and the NRF hosted a training workshop for ten AWARD fellowship holders and 20 fellowship holders. The workshop took place on 6 December 2017 in Pretoria.

Science Forum South Africa 2017

The OWSD-SANC hosted a panel session at the 2017 SFSA titled the Contribution of African Women Scientists to Innovation for Development. The objectives of this session were to discuss the promotion of the participation of women in science and technology in Africa with a view to strengthening their roles in the development of their countries, and to analyse the scientific productivity and efficiency of women scientists in Africa with examples or role models where possible.

SADC WISET Consultation Meeting of Experts

The OWSD-SANC supported the SADC Woman in Science, Engineering and Technology (WISET) Consultation meeting. A meeting of the approved SADC Charter on Women in Science Engineering and Technology chapters was held from 12 –14 December 2017 in Swaziland.

Table 3: Programme 3: Strategic Objective Annual Targets and Performance Indicators for 2017/18

Strategic objective	Planned target	Performance indicator	Actual performance 2016/17	Actual performance 2017/18	Variance	Status	Comment
To increase and diversify the Membership of the Academy	27%	Proportion of women Members	25%	26%	-1%	Not achieved	Continue to follow Council-approved transformation policy to address under-represented designated groups
	29%	Proportion of black Members	29%	30%	+1%	Exceeded target	Appeal to Members when submitting nominations/ voting to take due consideration of the present Membership base in an effort to improve on the demographic profile of ASSAf with respect to race and gender and other efforts to improve the proportion of black Members yielded results that were better than expected
To recognise and reward excellence in science and promote scholarly activity	2	No. of Science-for-Society Gold Medals awarded	1	1	-1	Not achieved	The Selection Committee reached a general consensus not to award a second medal this year
	1	No. of Distinguished Visiting Scholars hosted	0	1	0	Achieved	
	2	No. of regions hosting public lectures	3	3	+1	Exceeded target	Increased activities (opportunity to collaborate with the US Embassy)
To collaborate with and strengthen African science academies	1	No. of joint meetings hosted with an African science academy ¹	4	2	+1	Exceeded target	Increased activities
To increase participation of young scientists in science-related activities	1	No. of Young Scientists' Conferences hosted	4	3	+2	Exceeded target	SAYAS bid to host the 3 rd Worldwide Meeting of Young Academies in 2017. Successful fundraising enabled the holding of this meeting alongside the Annual Young Scientists' Conference
To increase participation of women in science-related activities and promote the application of a gender lens in Academy activities	8	No. of new members of OWSD National Chapter	49	38	+30	Exceeded target	Targeted membership drive to increase numbers

¹A joint meeting is defined as a workshop/conference/symposium that is organised by ASSAf in partnership with one or more African science academies or NASAC.

2.4 Programme 4: Science Advisory Programme

In order for ASSAf to fulfil its science advisory role in support of policy development regarding key challenges facing the nation, a variety of consensus studies is undertaken. In addition to the in-depth consensus studies, ASSAf produces concise policymakers' booklets and workshop/symposium proceedings reports; the latter represent the products of various convening activities of the Academy, which in 2017/18 included topics such as education in the health professions, agricultural education and training and climate change in S&T. In addition to evidence-based studies on various topics, ASSAf also undertakes policy commentaries and produces authoritative statements when appropriate.

Studies generally fall into broad categories related to: health; education; humanities; climate change; energy; the science-policy nexus; biosafety and biosecurity, and poverty reduction. Once concluded, considerable effort is expended in disseminating the findings and ensuring effective uptake of the recommendations.

ASSAf has Standing Committees on Health; Scholarly Publishing in South Africa; Science, Technology, Engineering and Mathematics Education; Humanities; Biosafety and Biosecurity; and Science for the Reduction of Poverty and Inequality. Each of these committees provides strategic direction to ASSAf's science advisory activities.

The Academy's achievements in the Science Advisory programme are summarised below.

2.4.1 Health Studies

Standing Committee on Health

Five committee members have stepped down from the committee (in January 2018) after a six-year term: Prof Glenda Gray, Prof Jimmy Volmink, Prof Iqbal Parker, Prof Hoosen Coovadia and Prof Helen Rees.

Prof Salim Abdool-Karim is the new Chairperson for the committee and Prof Shabir Madhi is the Vice-Chairperson. The nine-member committee under new leadership held a meeting on 16 March 2018 where the way forward was agreed upon.

Reconceptualising Education and Training of an Appropriate Health Workforce for the Improved Health of the Nation

The consensus study addresses education and training needs of health professionals and other health care workers in South Africa to respond to the severe quantitative and qualitative shortfall in the health workforce.

It will be officially launched on 15 June 2018. The report will also be presented at the 2018 South African Association of Health Educationalists Conference in Durban on 28 June 2018.

Ethical, Legal and Social Issues Related to Human Genetics and Genomics in South Africa

The purpose of this study is to provide a well-researched document based on a combination of international best practice adapted to local conditions which will assist the national departments of Health and Science & Technology to draft policy, regulations and guidelines on matters pertaining to human genetics and the human genome.

Human tissue legislation is complex and the law is known to lag behind technological advances. Nowhere is this more evident than with work being done on human genetics and the human genome. In South Africa, the situation is exacerbated by an almost complete absence of legislation at multiple levels in this field. This creates confusion, anxiety and the probability that South Africans of all socio-economic classes will not be able to benefit adequately from technological advances which result in improvements in human health.

Good progress has been made on this study in this reporting year, with several stakeholder and panel meetings. The report will be published in 2018.

Mental, Neurological, and Substance Use (MNS) Disorders

Globally, over two-thirds of people with MNS disorders do not receive the care they need. This is particularly acute in low and middle-income countries, which are home to three-quarters of the global burden of disease attributable to mental and neurological disorders. South Africa has a significant burden of MNS disorders.

This consensus study aims to:

- provide baseline data on current offerings in South African training programmes of the different cadres of workers in the human resource mix for the delivery of integrated MNS disorder care using a task-sharing model;
- map these data against core competencies identified for MNS disorders in previous studies;
- make recommendations for core competencies required of training programmes to the Health Professions Council of South Africa, as well as other training and regulatory bodies.

External funding was received for this project and good progress is being made.

2.4.2 Education Studies

STEM Education Standing Committee

Four members stepped down due to the expiry of their terms: Prof Fritz Hahne, Prof Marc Schafer, Prof Loyiso Jita and Prof Delia Marshall. Prof Marietjie Potgieter, Prof Zodwa Dlamini, Prof Amanda Weltman and Mr Kevin Govender agreed to stay on as committee members.

Revitalising Agricultural Education and Training

ASSAf published a consensus study on *Revitalising Agricultural Education and Training (AET)* in September 2017. The report was officially launched on 27 September 2017.

The study sought to identify and address the challenges facing the AET sector in South Africa in view of this sector's importance in meeting the UN SDGs.

It states that South Africa's agricultural sector faces severe challenges and urgent intervention and transformation of the sector are required.

Agriculture is a key component of the South African economy and delivers more jobs per Rand invested than any other productive sector, making it critical in the face of rural poverty and food insecurity.

Challenges include the declining accessibility to quality water sources, the impact of unsustainable food production practices, competition with other industries for the use of arable land, and the failure to effectively address land redistribution.

Among the primary challenges faced by the sector are the challenges experienced in the broader AET system. These challenges are largely historical, identified early on in South Africa's democracy, and there is an urgent need to address these issues.

Some of the key findings of the study include inadequate funding for practical-level training; weak linkages to industry for understanding training needs; poor quality and inadequate numbers of educators who are appropriately trained to teach agriculture at school level; and poor linkages in the research-teaching-extension nexus.

The two fundamental recommendations of the study are that the severity of the continued challenges in AET and the urgent need for change should be acknowledged and that a ministerial committee should be established.

Other recommendations are wide-ranging and practical and aimed at informing policymakers with a view to improving the quality of AET in South Africa.

A Concise version of the report was also published.

Status of Postgraduate Research Training in Engineering

This ASSAf consensus study is seeking to assist the DST with information that will enable an assessment of the state of postgraduate training in engineering in South Africa with respect to possible systemic challenges or shortcomings.

A consultative workshop with representatives from industry was held in April 2017; the workshop was titled Assessing the Employability and Demand for Postgraduate Engineering Students.

Drafting of the report is making good progress.

2.4.3 Poverty Reduction Studies

Standing Committee on Science for the Reduction of Poverty and Inequality

Activities are overseen by a Standing Committee.

Social Grant Statement

In December 2017, ASSAf issued a statement to call for urgent action from government to address the looming crisis in the delivery of social grants.

Failure to deliver social grants will compromise the well-being of millions of the most vulnerable of South Africa's people.

Social grants contribute significantly to the social and economic development of the population and long-term ethical and sustainable solutions should be found to address potential failures in the delivery of these grants.

Child support grants, disability grants and old-age pensions have achieved significant reductions in poverty, improvements in nutrition, health, education and income for millions of households. Grants are a vital source of livelihoods and essential to reducing inequality in the country. The social grants system is also firmly established and constitutionally protected.

Failure to find a legal, cost-effective, corruption-free and sustainable solution to the delivery of social grants after the current contract with Cash Paymaster Services expires will place the welfare of over 17 million people at risk.

It will increase poverty and inequality, undermine the health, nutrition and social well-being of children, and will erode confidence and public trust in our constitutional democracy. It will have a retrogressive effect on the country's human development outcomes and is contrary to the state's constitutional mandate to advance the human rights of all South Africans.

2.4.4 Humanities Studies

Humanities Standing Committee

Activities in the humanities field are overseen by a Standing Committee on the Humanities. Three new members have been confirmed, Prof Neil Roos (UFS), Prof Vasu Reddy (UP) and Prof Achille Mbembe (Wits). Prof Deborah Posel has resigned from the committee. Prof Crain Soudien and Prof John Higgins terms were extended for another three years. Their focus of activities was on the Humanities book award and the ASSAf Annual Humanities Lecture reported earlier.

The ASSAf Annual Humanities Lecture entitled Steve Biko's 'Envisioned Self' and the Makings of a South African was delivered by Prof Njabulo Ndebele, Chairman of The Nelson Mandela Foundation (NMF) and the Mandela Rhodes Foundation on 26 October 2017 at the UP.

2.4.5 Biosafety and Biosecurity Studies

Standing Committee on Biosafety and Biosecurity

The Standing Committee on Biosafety and Biosecurity oversees all aspects of biosafety, including bio-ethics, bio-risks and good laboratory practice, as well as biosecurity.

Regulatory Implications of New Breeding Techniques

This consensus study, *Regulatory Implications of New Breeding Techniques*, was undertaken on behalf of the DST, and aimed to investigate the biosafety implications of new genetic engineering technologies and the robustness of current biosafety regulations to accommodate the new technologies. The study was finalised in March 2017 and is available on www.assaf.org.za.

2.4.6 Climate Change and Energy

Biennial Report on the State of Climate Change S&T in South Africa

A consultative workshop on climate change S&T in South Africa was hosted by ASSAf on 18 January 2017.

The purpose of the workshop was to receive feedback from representatives of organisations featured in the draft of the Biennial Report on the State of Climate Change S&T in South Africa.

The workshop was well attended, with representatives from the TIA, Department of Environmental Affairs, Water Research Commission, MRC, ARC, universities, South African Weather Service, South African Environmental Observation Network, the *Deutsche Gesellschaft für Internationale Zusammenarbeit*, South African-German Energy Programme, and Risk and Vulnerability Science Centres.

The report, commissioned by the DST, was formally submitted on 31 January 2017 and presented to the Director-Generals' Cluster on Economic Sectors, Employment and Infrastructure Development on 1 March 2017 and to Cabinet on 23 March 2017.

Since uploading to the ASSAf Research Repository in July 2017, the report has been viewed 1 021 times and downloaded 863 times.

Preparations for the second biennial report are underway.

South Africa's Technical Readiness to Support Hydraulic Fracturing

A conference entitled The Shale Gas Industry in South Africa: Toward a Science Action Plan was held in Port Elizabeth from 31 August to 1 September 2017. The objective of the conference was to showcase critical national reports on shale gas in South Africa; analyse the regulatory environment; and consolidate common findings and recommendations and provide a platform for debate.

The conference was attended by 126 key stakeholders from government, industry and academia. African and international delegates also attend the conference.

The opening address was delivered by Dr Phil Mjwara, Director-General of the DST. Further notable representations were made by Mr Jacob Moatshe, Acting Deputy Director-General of Mineral Policy and Promotion at the Department of Mineral Resources (representing the Chair of the governmental Hydraulic Fracturing Monitoring Committee), Advocate Thabo Mokoena Director-General of the Department of Mineral Resources and Ms Busisiwe Khumalo, General Manager at the Eastern Cape office of the Premier. The conference received extensive media coverage.

A proceedings report was published.

ASSAf was requested by the DST to draft a Science Action Plan (SAP) on the way forward.

The SAP was presented and submitted to DST on 15 March 2018.

Since uploading the main consensus study report to the ASSAf Research Repository in October 2016, the report has been viewed 1 682 times and downloaded 870 times. The media release has been downloaded 198 times. The S&T Parliamentary Portfolio Committee invited ASSAf to present the report findings to them in October 2017.

State of Energy Efficiency in South Africa

ASSAf committed to undertake this study in July 2016. This study analysed, reviewed and assessed the state of energy efficiency technology research, development and innovation in South Africa, with specific reference to the electricity value chain. The study aimed to inform the DST of opportunities for further development in terms of human capital development, intellectual property output and technology development and innovation in order to promote the adoption of energy efficiency technologies in South Africa.

The consensus study report was finalised during this financial year.

Table 4: Programme 4: Strategic Objective Annual Targets and Performance Indicators for 2017/18

Strategic objective	Planned target	Performance indicator	Actual performance 2016/17	Actual performance 2017/18	Variance	Status	Comment ³
To facilitate scholarly engagement on key national and global challenges	2	No. of workshop reports ¹ published	2	2	0	Achieved	
To facilitate evidence-based science advice to support policy development	2	No. of consensus study reports ² published	2	3	+1	Exceeded	Increased activities

¹A workshop report is a published report summarising the presentations and discussions at a workshop/symposium hosted by ASSAf.

²A consensus study report is a substantial evidence-based report that follows the standard Academy consensus study methodology, is peer-reviewed, approved by the ASSAf Council and contains a set of strong recommendations.

³Additional workshop reports produced as a result of Liaison Programme activities have not been included here.

3 South African Young Academy of Science

3.1 Introduction

The South African Young Academy of Science (SAYAS) was established on 27 September 2011. SAYAS was born out of the need for young scientists to contribute towards solutions to national and global challenges facing society. SAYAS represents the voice of young scientists on national and international issues and gives them a platform to influence policy decisions. SAYAS also aims to contribute towards the development of scientific capacity in South Africa through mentoring and role-modelling of future scientists, and by fostering opportunities for interdisciplinary collaborations between young scientists.

SAYAS objectives are:

- Promoting SAYAS and its value-adding initiatives.
- Advancing scientific excellence for South Africa and Africa.
- Influencing science policy.
- Translating science for society to promote science awareness.

Since its inception, SAYAS has inaugurated 70 members who were selected based on their academic excellence and service to society. Members are elected for a five-year period and 2017 saw the first group of SAYAS alumni. ASSAf continues to provide secretariat support and funding to support SAYAS activities.

3.2 New SAYAS Members Inaugurated

In 2016, SAYAS inaugurated nine young scientists, comprising 45% males and 55% females.

Name	Gender	Race	Institution	Area of Specialisation
Dr Adeyemi Aremu	Male	Black	NWU	Indigenous Knowledge Systems (Science and Technology), Phytomedicine/Traditional Medicine, Plant Physiology
Prof Chris de Wet	Male	White	Unisa	Humanities, Religion and Theology, History and Histories of Slavery and Religious Conflict
Dr Mardé Helbig	Female	White	UP	Computational Intelligence, Dynamic Multi-objective Optimisation Constrained Optimisation
Prof Roula Inglesi-Lotz	Female	White	UP	Energy and Environmental Economics; Applied Economics and Econometrics
Dr Lindie Koorts	Female	White	UFS	Humanities (History, Biography)
Prof Reza Malekian	Male	Black	UP	Smart Cities, Sensors Networks and Internet of Things, Design and Developments of Industrial Applications in the Area of E-health, Mine Safety, Water Management, and Agriculture. Stochastic Modelling and Analysis Cloud Computing and Big Data
Prof Benita Olivier	Female	White	Wits	Sports Physiotherapy, Human Movement Analysis
Dr Rory Pilosof	Male	White	UFS	History, Land, Labour, Whiteness
Prof Yanxia Sun	Female	Black	UJ	Electrical Engineering Evolutionary Optimisation, Nonlinear Dynamics, Automation

3.3 SAYAS General Assembly

SAYAS held its fifth General Assembly on 11 and 12 October 2017 at the NRF, Pretoria. The following people were elected as Executive Committee members for 2017/18.

Prof Makondelele Makatu (Co-Chair)

Prof Philani Moyo (Co-Chair)

Dr Nosipiwe Ngqwala (Executive Member)

Dr Mardè Helbig (Executive Member)

Prof Kanshukan Rajaratnam (Executive Member)

3.4 ASSAf Young Scientists' Conference

SAYAS partnered with ASSAf, TWAS ROSSA and the OWSD-SANC to host the Annual Young Scientists' Conference. Details are provided in Section 2.3.6.

3.5 Science Engagement and Outreach Programme

3.5.1 Initiatives to Enhance SAYAS in Eastern Cape

A two-day retreat organised by the University of Fort Hare's Department of Livestock and Pasture Science for its postgraduate students aimed to primarily address the maximisation of research output. Dr Nosipiwe Ngqwala, SAYAS Executive member attended the retreat held on 21 April 2017 in Port Alfred and made a presentation on various engagements within the academy stressing the need for young professionals themselves to be bold enough to mentor one another (peer-to-peer mentorship) and seek innovative ways of implementing their ideas. To achieve this, Dr Ngqwala noted that there is a need for an initiative that brings young talented professionals together to meet regularly with a view to improving their leadership, technical, entrepreneurial and research skill sets through various activities including workshops, training, speed dating, etc.

The knowledge gap between experienced academics and emerging academics (postgraduate) seems to be widening. An outcome of this lack of continuity has been a young work force that is inadequately prepared to deal with the postgraduate studies challenges in our country. This also impels postgraduates with innovative and creative ideas, but with no information on the appropriate channels to implement their ideas due to lack of well-coordinated and organised mentorship programmes dur-

ing or upon the completion of their postgraduate degrees. In addition, young professionals, particularly those still within the university systems, find it difficult to actively and meaningfully participate in the academic space.

3.6 OWSD-SANC, SAYAS and DUT co-host Research in SITE

SAYAS jointly co-hosted a Research in SITE and Gender Round Table together with OWSD-SANC and DUT from 15 –16 May 2017 in Durban. The workshop was mainly funded through GenderInSITE, an international initiative to promote the role of women in SITE. The workshop demonstrated how applying a gender lens to SITE can provide deeper insights, more effective programmes and more sustainable outcomes in the context of development.

SAYAS was represented by Prof Puleng Segalo and Dr Naomi Nkealah. In an effort to build networks among National Young Academies (NYAs), SAYAS facilitated the participation of Dr Fadzai Mutseyekwa from the Zimbabwe Young Academy of Science.

The discussions included presentations, panel and round-table discussions on why gender in SITE; misconception of gender in research; case study examples of the DUT Urban Futures Centre and engagement; ethical research and gender equity; the missing links and challenges to achieving gender parity in research and innovation; mitigating against gaps and strategies for building research excellence in Africa.

The round table also presented an opportunity to interrogate gender dimensions of a Statement (See <http://www.sayas.org.za/wp-content/uploads/2016/11/SDH-Conference-Statement-Nov2016.pdf>) produced following a workshop on social determinants of health (SDH) which was held by NYAs in Africa in November 2016. Discussions focused on: framing gender in research; gender and SDH: minding the gaps; interrogating the missing gender question in the statement. Particular recommendations and outcomes were made which will feed into the report for the OWSD-SAYAS-DUT initiative to be shared with the network and strengthen mentorship programmes for women in SITE and sustainable development.

3.7 SAYAS at DST Youth Indaba

SAYAS participated in a Youth Indaba organised by DST at the CSIR on 9 June 2017.

The indaba was aimed at providing a platform for getting inputs from a broad cross-section of youth for an action plan that will enhance the contribution of STI to youth development. The SAYAS panel titled Enabling STI Policy aimed at examining policies, strategies, and programmes designed to unlock youth opportunities, assessing how STI is responding, how to place STI as a catalyst to youth development and what policy instruments could be exploited further.

Mrs Naledi Pandor, Minister of Science and Technology emphasised the need to use science agencies to carry out research in order to use evidence-based approaches to provide solutions. She also indicated the need to connect the informal economy to the formal economy. She cautioned youth not to fail to understand the regulatory framework in which they were expected to participate as innovators.

Dr Karen Cloete, SAYAS Co-Chair was the panel facilitator while other panellists included Dr Aldo Stroebel, Dr Nosiphiwe Ngqwala and Ms Dorothy Ngila, an Executive Committee member of the OWSD-SANC.

3.8 SAYAS at NEF Africa Science Week

Dr Thobela Nkukwana represented SAYAS during the NEF Africa Science Week, held on 26 June 2017 in Pretoria.

Given that there is a shift in the world's economically advanced countries away from traditional manufacturing and service industries towards economies driven by knowledge and intellectual capital, the panel explored what this meant for South Africa and the African continent.

3.9 3rd Worldwide Meeting of NYAs

The 3rd Worldwide Meeting of National Young Academies of Science took place from 20 – 21 July 2017 and was hosted by SAYAS and co-organised by the GYA.

This meeting explored the science advice theme from the Young Scientists' Conference that was held a day earlier and focused on how young academies and young scientists, in particular, can contribute to the achievement of the SDGs.

Some 80 representatives from more than 35 NYAs and young academy initiatives from all over the world attended the meeting.

The meeting under the theme One Health – Health and Development in the Context of an Urbanising Planet and Implications for Science Policy focused on SDGs 3 (Good Health and Well-Being), 8 (Decent Work and Economic Growth) and 11 (Sustainable Cities).

Participants also discussed the role of NYAs as a mechanism for national implementation of the SDGs, and how science and technology can be harnessed towards achieving the SDGs. As NYA represent the voice of young scientists for the advancement of issues of importance to society and to young scientists, this meeting was an important platform for the NYAs to interrogate how to lend their support to the advancement of the SDGs in their respective countries.

The international delegates had a taste of a warm South African welcome in the form of an interactive drumming session. SAYAS also undertook a science outreach exercise in partnership with Jive Media. This saw the NYA delegates visit the East Rand township of Tsakane and interact with 60 learners from two independent science clubs – the African School of Excellence Science Club and the Yael Science Club (Isaac Newton School in Johannesburg). Hands-on activities were the hallmark of the Science Spaza experience.

Funding support was received from the GYA, NRF, TWAS ROSSA, MRC, ICSU ROA, IAP for Health, New Zealand High Commission in South Africa and Volkswagen Foundation.

3.10 SAYAS at Science Forum South Africa 2017

SAYAS hosted a Science Talk at the SFSA 2017 on Thursday, 7 December, titled Harnessing Young Scientists' Leadership Dividend for Sustainable Development and Inclusive Growth.

The panel session was aimed at advocating for the harnessing of young scientists as a major resource for development, acting as agents for social change, economic expansion and innovation. It called for the expansion of this, as well as other models, such as the NYAs, the NEF, etc., through advancing a curriculum for academic leadership development which can be utilised in other institutions in Africa.

Panellists were Prof Bernard Slippers, Director, Forestry and Agricultural Biotechnology Institute, UP. He leads the Future Africa project at UP, as well as the Africa Science Leadership Programme and Prof Makondelele Makatu, Department of Psychology, University of Venda, SAYAS Co-Chair and 2016 Africa Science Leadership fellow.

4 South African Academy of Engineering

The South African Academy of Engineering (SAAE) provides access to the wealth of knowledge and experience of its 190 members who are eminent practitioners from all engineering disciplines. For the benefit of all people of South Africa and for the technological welfare of the nation, SAAE offers independent, evidence-informed advice, while promoting excellence in the science and application of engineering.

In this endeavour the SAAE collaborates with academic and scientific institutions which have a similar mission, and maintains bilateral and multilateral relations with academies in SA and other countries.

During the past year SAAE undertook the following activities in pursuit of these goals.

4.1 National Activities

Website

In January 2018, SAAE launched its new website (saae.co.za) which has been newly designed to promote the aims and objectives of the academy better.

Academy Lectures

On 2 November 2017, in Cape Town, and on 14 March 2018, in Johannesburg, SAAE Fellow Professor Mike Muller presented the 2017 Academy Lecture entitled Decolonising Engineering. Prof Muller is a former Director-General of the Department of Water and Sanitation. The lecture focused on the current water supply crisis in the Western Cape and on similar situations in other parts of South Africa. These cases provide a perspective on the challenges faced by water institutions in South Africa. In referring to the current water crisis in Cape Town, Prof Muller focused on how policy debates could be improved by keeping them technically informed, and how engineers should contribute in this regard. Both lectures were well attended.

Hendrik van der Bijl Lecture

Mr Peter Staude, Chief Executive of Tongaat Hulett Limited, the agricultural and agri-processing Johannesburg Stock Exchange (JSE)-listed company, presented the 2017 Annual Hendrik van der Bijl Memorial Lecture at UP on 29 September 2017. The memorial lecture is presented annually by the SAAE in collaboration with UP to commemorate the great contribution made by Hendrik van der Bijl to the industrial and scientific development of South Africa. The lecture was attended by 115 people.

Induction of New Fellows

Member Induction Dinners were held in the Western Cape and Gauteng where nine new Fellows were inducted by SAAE President Trueman Goba. An Honorary Fellowship was bestowed on Fellow Prof Fred Hugo. At both Induction Dinners, Fellow Bob Pullen who is a member of the Lesotho Highland's Development Authority's Project Management Unit in Maseru, Lesotho, presented an overview of the Phase 2 of the Lesotho Highlands Water Project.

Cooperation with ASSAf

A report on South Africa's technical readiness to support a shale gas industry, undertaken by the ASSAf in collaboration with SAAE, was approved by Cabinet in 2017. Three of the seven members of the panel that undertook the study are SAAE Fellows. On 1 November 2017, the panel made a presentation of its findings to the Parliamentary Portfolio Committee on Science and Technology. The panel is now engaged with the DST on the development of a SAP to address questions relating to matters such as determination of the quantity of gas present, and the amount of water which will be required to develop the resource. It is also important, in preparing for the launch of a shale gas industry, that all the necessary legislation is in place and that the skills are available to ensure that activities related to exploration and exploitation of the shale gas reserves are fully compliant with international best practice.

Collaboration with the Department of Water and Sanitation

In December 2017, SAAE was invited by Mr Trevor Balzer, Deputy Director-General of the Department of Water and Sanitation, who is a Fellow of SAAE, to participate in a first round-table briefing regarding the preparation and implementation of a National Water and Sanitation Master Plan. After the briefing, SAAE invited Fellows with expertise in the field of water and sanitation to participate in preparing comments on the draft master plan. These comments were debated by SAAE Fellows and invited guests on 24 January 2018. The consolidated comments were submitted to the Department of Water and Sanitation on 8 February 2018.

SAICE-SAAE support to City of Cape Town

On 29 January 2018, a joint SAAE/SA Institution of Civil Engineering (SAICE) delegation met with officials of the City of Cape Town and thereafter with the Premier of the Western Cape, Helen Zille, to discuss the water-supply crisis in the city of Cape Town. Attention was focused on the measures that the city was implementing to reduce water demand during the current water-supply crisis, and on short and long-term measures that the city was planning to implement in order to augment bulk water supplies to the city. The delegation was led by Prof Mike Muller who is a Fellow of both the SAAE and SAICE. The consultations were attended by officials of the city of Cape Town, four SAICE Members and four SAAE Fellows who are also SAICE members.

On 7 February 2018, a second joint SAAE/SAICE delegation met with the Parliamentary Portfolio Committee of the Department of Water and Sanitation, including the Director-General. The purpose of the meeting was to discuss the drought situation in the Western Cape and to emphasise the need for improved management of water resources and supplies in South Africa that the SAAE had documented and submitted to the Department of Water and Sanitation. The delegation was led by SAAE/SAICE member Neil Macleod and included two SAICE members and officials of the city of Cape Town.

4.2 International Activities

Council of Academies of Engineering and Technological Sciences (CAETS)

The *Real Academia de Ingeniería* of Spain was the host for the 25th CAETS Council Meeting and Convocation which took place in Madrid, Spain from 13 to 17 November 2017. Formal meetings of the Executive Committee, the Board of Directors and the Council were held at the Royal Academy of Engineering (RAE) at 10 Calle don Pedro, on 13 and 16 November 2017.

The theme of the conference was Engineering a Better World and focused on the contributions of engineering to the bio-economy, emphasising challenges such as future food security, the food-land-energy nexus, and the blue bio-economy. SAAE was represented by Dr Trueman Goba (President), Dr Mike Shand (Vice-President), Mr Bob Pullen (Past-President and Treasurer) and Mr Felix Reinders (Fellow concerned with the challenges of the bio-economy).

Chinese Academy of Engineering (CAE)

The CAE indicated that it is eager to renew the MoU with SAAE and invited SAAE to suggest topics for future collaboration. This activity is in progress.

Mr Bob Pullen, Executive Committee Member and Past-President of SAAE, was appointed to the Advisory Board of the International Centre for Engineering Education (ICEE) whose Inaugural Meeting took place in June 2017 in Beijing. The ICEE is a newly established, UNESCO-accredited organisation, sponsored mainly by the CAE.

Following the First World Transportation Conference which took place in Beijing in June 2017, where SAAE Fellows Dr Kevin Wall and Prof Alex Visser presented papers, the conference organisers invited SAAE to nominate a keynote speaker for the Second World Transportation Conference in 2018. Fellow Prof Alex Visser was nominated.

Royal Academy of Engineering (RAE) – Pilot Study for the Africa Catalyst Initiative

In July 2017, the SAAE completed a pilot study of the institutions in the engineering profession in Swaziland as one of 15 assignments comprising Phase 1 of the Africa Catalyst Initiative of the Global Challenges Research Fund of the United Kingdom (UK). This initiative is aimed at developing and strengthening the institutional capacity of the engineering professions in sub-Saharan Africa. The RAE, which has been appointed as implementing agent of the fund for the initiative in late 2017 invited bids for Phase 2 of the initiative to focus on institutional capacity building in sub-Saharan African countries and on research related to engineering education.

The SAAE submitted a bid for a Phase 2 grant to implement its capacity building recommendations in Swaziland. A large number of bids were received by the RAE and the SAAE was not successful in securing this funding. The SAAE is considering alternative ways to fund its recommendations, including later phases of the Africa catalyst initiative.

Frontiers of Engineering

On invitation from RAE, SAAE nominated two engineers to attend a workshop on Frontiers of Engineering for Development which took place in Pretoria from 3 to 6 December 2017, in the same week as the SFSA 2017. The workshop brought together about 60 outstanding young engineers to network and engage with peers, outside their disciplinary silos, on global challenges that cross disciplinary boundaries. They encourage collaborative work, promoting international development and cross-disciplinary thinking among the next generation of leaders in engineering in the UK, and in developing countries.

The symposium in Pretoria was the fourth in a series, and focused on Data, Knowledge Economy and Agriculture. Nominees had to have five to 20 years postdoctorate or equivalent experience in industry, an established interest in engineering for international development purposes, or be keen to apply existing work to combat global challenges and the potential to be a future leader of the engineering community. SAAE's two nominees reported that it was an incredible opportunity, that they had met knowledgeable people and were impressed with the calibre of the participants. The symposium was outcomes-focused and the participants were constantly challenged to look for practical solutions rather than simply talk about the problems from a theoretical perspective. All participants were involved in a space where they were working towards betterment of the world and on improving people's lives. The event encouraged multi-disciplinary thinking, bringing together different people with varied interests and expertise. The two nominees recommended continued support from SAAE for this and similar events.

US National Academy of Engineering (NAE)

SAAE was invited by the NAE in the USA to participate in their Frontiers of Engineering Programme. This initiative envisages bringing together 60 emerging engineering leaders from the USA and 60 in total from three or four African countries for a three-day Africa-USA symposium every second year, alternating venues between the USA and in Africa. The President and Vice-President of SAAE had various teleconferences with representatives of the NAE regarding the proposal to present an Africa-USA Frontiers of Engineering Symposium in South Africa in 2018 and it was agreed that both SAAE and the NAE would endeavour to find sponsorship for this symposium. Due to changes and uncertainty regarding funding for such projects under the new administration in the USA, it was decided in June 2017 to postpone the symposium to 2019. Both SAAE and the NAE will be seeking sponsorships for this symposium.

5 International Council for Science Regional Office for Africa (ICSU ROA)

5.1 Governance

ICSU ROA reports directly to the ICSU Head Office in Paris and is hosted by ASSAf. It receives strategic guidance from the Regional Committee for Africa (RCA).

5.1.1 Personnel

The office is manned by the following personnel:

- i. Dr Daniel Nyanganyura – Regional Director
- ii. Dr Richard LK Glover – Programme Specialist
- iii. Ms Nomasomi Gasa – Project Coordinator
- iv. Mr Bongani Mahlalela – Communications Officer
- v. Ms Lerato Mmatloa – Administrative Assistant
- vi. Ms Hanna McCallum - Intern

Ms Hanna McCallum (from Australia) worked as a voluntary intern attached to the Africa Chapter of the Leading Integrated Research for Agenda 2030-International Network for Government Science Advice (LIRA-INGSA)-Africa Secretariat at the office from September 2017 to March 2018.

5.2 Scientific Activities

5.2.1 Publications

The 4th book titled *African Indigenous Medical Knowledge and Human Health* was published. This book has been published through the Health and Human Well-being Consortium and was coordinated by ICSU ROA.

5.2.2 Events Organised

7th African Unity for Renaissance Conference & African Day Expo (South Africa 21 – 25 May 2017)

This event, which was co-organised with the HSRC, Thabo Mbeki African Leadership Institute and other stakeholders, brought together established researchers and scholars in the fields of sustainable development, economics, green economy and renewable energy, environment and system sciences to interrogate Africa's response to the new development agenda as specific in the SDGs and Africa's Agenda 2063. ICSU ROA partially sponsored this conference and Prof Hillary Inyang, a former RCA member from Nigeria was keynote speaker for a session on mainstreaming STI of the SDGs. There was also an exhibition of ICSU ROA's programmes and activities.

ICSU GA32 Regional Consultative Forum for African ICSU National Members and Scientific Unions

ICSU ROA hosted a consultative forum in South Africa on 8 – 9 June 2017 attended by 15 of its National Members and representatives from 18 of their Scientific Unions. Participants deliberated on issues related to the ICSU-International Union of Crystallography merger, drafted an African input to the draft strategy documents and formulated a consolidated African Statement about the merger which was sent to Paris as inputs from the continent to be discussed at the upcoming ICSU General Assembly in Taiwan.

INGSA-Africa Chapter Steering Committee Strategy Retreat (22 – 23 August 2017, Kampala, Uganda)

This two-day strategy retreat was hosted by the Uganda National Academy of Sciences and attended by all six members. Participants made inputs to enrich the interim terms of reference and mode of operation of Regional Chapters. They also consolidated a workplan for the INGSA-Africa Chapter running till December 2018 for submission to the INGSA Secretariat and ICSU.

The 19th ICSU Regional Committee Meeting

The meeting took place from 19 – 20 September 2017 in South Africa and was attended by most members. The Executive Director of ICSU participated via Skype. Discussions focused on directing and advising

ing ICSU ROA on its planned activities geared towards the implementation of the ICSU ROA APP for the 2017/18 financial year. The meeting also discussed the draft ICSU ROA APP and budget for the 2018/19 financial year. This was followed by a joint ICSU ROA – Mangosuthu University of Technology Science Seminar on the theme: ICSU ROA Africa Science Plans and the AU Agenda 2063 with special emphasis on the Health-Energy-Disaster Risk Nexus in African Cities. The co-published ICSU ROA-HSRC book on *Natural and Human-Induced Hazards and Disasters in Africa* was launched at the seminar.

INGSA-Africa Chapter Pre-AMASA 13 Learning Collaborative Workshop (13 – 14 November 2017, Nigeria)

This two-day Learning Collaborative Workshop was designed to inform participants on science advice for policymaking at all levels of government. It was coordinated by the Nigerian Academy of science in collaboration with the INGS-Africa and brought together participants from various academies of science in Africa and grantees of the Swedish International Development Cooperation Agency (Sida)-funded ICSU programme on LIRA 2030. The workshop consisted of presentations by representatives from the INGS-A headquarters in New Zealand, UNESCO Abuja office and the steering committee of INGS-Africa as well as case studies which provided an interactive way of applying science advice into realistic situations.

LIRA 2030 Annual Research Forum (14 – 15 November 2017, Nigeria)

The forum which was organised as part of AMASA 13 brought together some awardees to present their progress reports and experiences in the implementation of their respective projects, as well as foster collaboration and networking between them and the established researchers from the various academies of science. It also sought to foster North-South collaboration and establish links with non-academic stakeholders, representatives from other relevant global and regional research initiatives, e.g. Future Earth, Integrated Research on Disaster Risk and the Urban Health and Well-being.

The 3rd African Future Earth Committee Meeting (27 – 28 November 2017, South Africa)

The meeting was attended by most members of this committee as well as representatives from the Future Earth Global Secretariat and the NRF, which is the host of the Future Earth Regional Office for Southern Africa. Discussions focused on developing the Future Earth science agenda for Africa, the Future Earth regional structures on the continent, as well as the continued role of ICSU and ICSU ROA. Dr Amy Luers, the Executive Director of Future Earth, joined the meeting via Skype.

4th ICSU ROA African Science Plans Steering Committee Meeting

The meeting which was held in Johannesburg, South Africa on 4 December 2017 and attended by most of the committee members deliberated on the issues around and gave inputs towards establishing a strategy for the implementation of the Africa Science Plans that included the establishment of sub-regional research groups.

Project Writing Workshop

It was held in Johannesburg, South Africa, 5 – 6 December 2017 and brought together 40 scientists, ten from each of the four science plan thematic areas to explore avenues to develop and implement projects derived from the four ICSU ROA Africa Science Plans. The participants developed generic project proposals, which they will continue to improve on and perfect to be submitted in response to grant calls.

Science Forum South Africa 2017

This forum was held in South Africa from 7 – 8 December. ICSU ROA organised a session titled The Implementation of ICSU ROA Science Plans for the Thematic Area Coordinators of the African Science Plans Steering Committee to present the work done so far, as well as the proposed action plans for each of the Africa Science Plans. The session was well attended, and most participants expressed interest in joining the implementation of the documents. ICSU ROA also manned an exhibition stand which attracted the attention of many visitors.

LIRA2030 Scientific Advisory Committee Meeting (8 – 9 February 2018, Malawi)

This meeting was organised by ICSU ROA in collaboration with ICSU headquarters as part of its mandate towards the realisation of the LIRA2030 initiative. The meeting reviewed the progress of the LIRA programme in 2017 and of projects that were selected in early 2017, as well as selected research projects to be supported in 2018. The committee also defined and refined the scientific priorities for the open LIRA call to be circulated in early 2018.

20th ICSU Regional Committee for Africa Meeting, (6 – 7 March 2018, Nigeria)

The meeting was attended by some members of the committee and the discussions focused on the financial status for the financial year 2017/18, activities of ICSU ROA for the financial year 2017/18 and those planned for 2018/19, as well as an outline of the activities for the 2019/20 financial year. The committee commended the work done, and support given by the government of South Africa, through the DST and ASSAf, for the activities of ICSU on the continent in general and ICSU ROA in particular. Issues around the ICSU-ISSC merger were discussed and proposals were made to ensure that the current rhythm of ICSU work on the continent is not disrupted by the transition process.

Workshop by ICSU's Committee on Freedom and Responsibility in the Conduct of Science (6 – 7 March 2018, Nigeria)

The workshop was organised by ICSU ROA, the committee and the Nigerian Academy of Science as a side-event to the RCA20 meeting under the theme: Shaping the Future of Researchers in Developing Countries: Strategies for Better Enabling Environment and Enhancing the Value of Research. This event brought together relevant experts to discuss the rights, freedoms, needs, and responsibilities of African researchers; mitigating measures for brain drain/loss; as well as proposed strategies to sustain the scientific careers of African scientists, particularly young and female scientists. ICSU ROA supported two young scientists from the continent to attend the workshop.

Sustainable Energy Science Plan Proposal Writing Workshop (16 March 2018, South Africa)

The one-day meeting brought together experts from the ICSU ROA Sustainable Energy Consortium and those from universities in South Africa to try and map collaborative avenues on the issues around the drafting of a proposal addressing the energy-water-urbanisation nexus. The meeting was held at UP and chaired by Prof Cheryl de la Rey, the ICSU Executive Board liaison member of the ICSU RCA and VC of UP. Part of the proposed work would be submitted in response to the third Lira2013 call for proposal.

5.2.3 Events Attended

Africa Regional Forum on Sustainable Development

The forum was held from 17 – 19 May 2017, Ethiopia and brought together high-level policymakers and experts from government and inter-governmental organisations, the private sector, civil society and other major groups, as well as international development partners. ICSU ROA gave a presentation titled A Guide to SDG Interactions: From Science to Implementation. ICSU ROA also participated in a panel of a capacity development workshop for major groups and other key stakeholders, which focused on the strengthening of the capacity of major groups and other stakeholders to effectively engage in the follow-up and review of the implementation of SDGs and Agenda 2063.

Strategy Working Group Side Meeting

The Strategy Working Group meeting was held on 30 – 31 May 2017 in France to discuss the future of global science, and identify possible roles of a prospective new council for the natural and social sciences, as well as draft a new strategic document. They also looked into the feedback from the ICSU family on the draft strategy document and based on this, they proposed a new strategy outline. The attendance of ICSU ROA during this meeting was important to gather information about the progress and in directing the discussions during the pre-ICSU GA32 African Consultative Forum that was held in Pretoria, South Africa, in June 2017.

Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ)

A joint meeting of SADC senior officials responsible for education and training, and for science, technology and innovation took place at the 11th Session of SACMEQ Assembly of Ministers.

The meeting, which was held from 19 – 23 June, 2017 in Swaziland reviewed the progress of the implementation of the Education and Training and Science, Technology and Innovation Programmes within the context of the revised SADC Regional Indicative Development Plan 2015 – 2020 and other relevant continental and international policy frameworks. ICSU ROA presented four items for noting: the revised ICSU ROA Science Plans; ICSU research support in Africa; the database initiative of scientists/researchers and research/academic institutions; and science for policy.

Conference on Higher Education, Policy and Research: Quality and Future Challenges for East Africa and the Indian Ocean

This conference was held from 2 – 4 May 2017 in Djibouti at which ICSU ROA gave a presentation highlighting the role of ICSU ROA and LIRA2030 in the advancing of Science and Climate Change in Higher Education.

Open Science Platform and Research Data Alliance Workshop

The workshop was held as part of the 14th General Conference of the AAU, 5 – 8 June 2017 Ghana and brought together important figures across Africa working in the field of open science and open data. The participation of ICSU ROA during this workshop enhanced deliberations and through its presentation, highlighted case studies and identified gaps on the continent in terms of policy, infrastructure, incentives and capacity building.

3rd Worldwide Meeting of Young Academies of Sciences, 19 – 20 July 2017 South Africa

ICSU ROA contributed funding for African scientists who attended the meeting in support of ASSAf, as well as to improve our visibility.

Asian Crystallographic Association Conference, 21 – 28 August 2017, India

This conference included many programmes that arose directly from the initiatives taken during the International Year of Crystallography 2014 and the pan-African meeting in Dschang in 2016, both of which ICSU ROA attended. ICSU ROA gave a presentation on its activities during the conference and participated in two discussion panels. Following these presentations, the Asian Crystallographic Association and the International Union of Pure and Applied Physics, have requested that ICSU ROA leads the process to organise a science colloquium in Rwanda before the end of the year – an event that will lead to the engagement with senior government official as well as local scientists. ICSU ROA contributed funding for African scientists who attended the meeting.

Leading Integrated Research for Agenda 2030 in Africa

ICSU ROA was involved in the evaluation of the pre-proposals submitted in response to the LIRA2030 call on Advancing the Implementation of SDG 11 in Cities in Africa through the engagement of RCA members and other scientists. Principal investigators of 31 shortlisted pre-proposals from 15 countries in Africa, representing different disciplines, communities of practice and different African universities were taken through a five-day training workshop on trans-disciplinary research, from 28 August – 1 September 2017 at the Makerere University, Kampala, Uganda.

As a partner to the LIRA2030 implementation process, ICSU ROA attended the workshop and engaged with the potential grantees.

CODATA International Workshop, 4 – 8 September 2017, Madagascar

The main purpose of the high-level meeting was to focus on the challenges and opportunities of open data in the big data world. The meeting was attended by eight ministers, as well as other high-level government official from Madagascar. The workshop focused on strategy, policy and institutional guidelines for implementation of open data principles in developing countries, especially in low and middle-income countries. ICSU ROA gave a presentation titled Supporting Scientific Research for the SDGs in Africa, which highlighted the activities of ICSU that support research at global and regional levels.

PART C: FINANCIAL INFORMATION



Index

The reports and statements set out below comprise the annual financial statements presented to the Parliament:

76	General Information
77	Council's Responsibilities and Approval
78	Audit and Risk Committee Report
80	Independent Auditor's Report to Parliament on the Academy of Science of South Africa
84	Council's Report
85	Statement of Financial Position
87	Statement of Changes in Net Assets
87	Cash Flow Statement
88	Statement of Comparison of Budget and Actual Amounts
89	Accounting Policies
99	Notes to the Annual Financial Statements

Abbreviations

GRAP	Generally Recognised Accounting Practice
IAS	International Accounting Standards

General Information

Nature of business and principal activities Promotion and application of scientific thinking in the service of society.

Members Prof Jonathan Jansen
Prof Himla Soodyall
Prof Brenda Wingfield
Prof Johann Mouton
Prof Zeblon Vilakazi
Prof Stephanie Burton
Prof Norman Duncan
Dr Shadrack Moephuli
Prof Eugene Cloete
Prof Sabiha Essack
Prof Shireen Hassim
Prof Barney Pityana
Prof Nancy Phaswana-Mafuya

Registered office 41 De Havilland Crescent
1st Floor, Block A
The Woods, Perseuor Park
Pretoria
0020

Business address 41 De Havilland Crescent
1st Floor, Block A
The Woods, Perseuor Park
Pretoria
0020

Postal address P O Box 72135
Lynnwood Ridge
0040

Bankers Standard Bank

Auditors SizweNtsalubaGobodo Inc
Registered Auditors

Council's Responsibilities and Approval

The Council members are required by the Public Finance Management Act (Act 1 of 1999), to maintain adequate accounting records and are responsible for the content and integrity of the annual financial statements and related financial information included in this report. It is the responsibility of the Council members to ensure that the annual financial statements fairly present the state of affairs of the entity as at the end of the financial year and the results of its operations and cash flows for the period then ended. The external auditors are engaged to express an independent opinion on the annual financial statements and were given unrestricted access to all financial records and related data.

The annual financial statements have been prepared in accordance with Standards of Generally Recognised Accounting Practice (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

The annual financial statements are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates.

The Council members acknowledge that they are ultimately responsible for the system of internal financial control established by the entity and place considerable importance on maintaining a strong control environment. To enable the Council members to meet these responsibilities, the accounting authority sets standards for internal control aimed at reducing the risk of error or deficit in a cost-effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the entity and all employees are required to maintain the highest ethical standards in ensuring the entity's business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the entity is on identifying, assessing, managing and monitoring all known forms of risk across the entity. While operating risk cannot be fully eliminated, the entity endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

The Council members are of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the annual financial statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or deficit.

The Council members have reviewed the entity's cash flow forecast for the year to 31 March 2019 and, in light of this review and the current financial position, they are satisfied that the entity has or has access to adequate resources to continue in operational existence for the foreseeable future.

The entity is wholly dependent on the National Treasury for continued funding of operations. The annual financial statements are prepared on the basis that the entity is a going concern and that the National Treasury has neither the intention nor the need to liquidate or curtail materially the scale of the entity.

The external auditors are responsible for independently reviewing and reporting on the entity's annual financial statements.

The annual financial statements set out on pages 85 to 114, which have been prepared on the going concern basis, were approved by the accounting authority on 25 July 2018 and were signed on its behalf by:



Prof Jonathan Jansen
Chairperson

Audit and Risk Committee Report

We are pleased to present our report for the financial year ended 31 March 2018.

Audit and Risk Committee members and attendance

The Audit and Risk Committee consists of the members listed hereunder and should meet four times per annum as per its approved terms of reference. During the current year four meetings were held.

Name of member	Number of meetings attended
Prof S Maharaj (Chairperson)	Four
Prof D van Wyk	Four
Prof E Cloete (Treasurer)	Four
Prof Z Vilakazi	Three
Prof J Kleynhans (appointed 21/02/2018)	One

Audit and Risk Committee responsibility

The Audit and Risk Committee discharged its responsibilities within its current terms of reference. The Audit and Risk Committee reports that it has complied with its responsibilities arising from section 51(1)(a)(ii) of the PFMA and Treasury Regulation 27.1.

The effectiveness of internal control

The Audit and Risk Committee, in executing its oversight role, considers ASSAf's internal controls to be effective. The Audit and Risk Committee and management are committed to ensuring that ASSAf's internal controls continue to be enhanced in order to ensure that they are effective and efficient and that they are responsive to the principles of good governance.

The Audit and Risk Committee is always prepared to welcome the external auditor's recommendations on internal control processes and procedures and is willing to ensure that they are implemented. The Audit and Risk Committee reports that it has complied with the requirement to submit reports to the Accounting Authority, the National Treasury and the Office of the Auditor-General. The Audit and Risk Committee is satisfied with the content and quality of the reports that were prepared and issued by the management of the entity during the year under review.

Evaluation of annual financial statements

The Audit and Risk Committee has:

- reviewed and discussed the audited annual financial statements to be included in the annual report, with the Auditor-General and the Accounting Authority;
- reviewed SizweNtsalubaGobodo (SNG)'s management report and management's response thereto;
- reviewed changes in accounting policies and practices;
- reviewed the entities compliance with legal and regulatory provisions; and
- reviewed significant adjustments resulting from the audit.

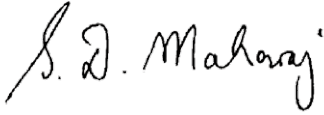
The Audit and Risk Committee concurs with and accepts SizweNtsalubaGobodo's report on the annual financial statements, and is of the opinion that the audited annual financial statements should be accepted and read together with the report of SizweNtsalubaGobodo.

Internal audit

During the year under review, the outsourced internal audit service providers, KPMG, undertook reviews of the Scholarly Publishing Programme as well as the Financial Discipline. To this effect three reports, including a progress report, were issued.

One of the functions of internal audit is to provide the Audit and Risk Committee and management with assurance on the effectiveness of internal controls. According to their progress report KPMG considered the internal controls to be operating effectively and noted possible opportunities for improvement in certain instances.

The Audit and Risk Committee is alert to the controversy that surrounds KPMG, and it engaged the firm in a rigorous manner to ensure that the integrity of ASSAf's internal audit process is not compromised. The Audit and Risk Committee is satisfied that the internal audit function is operating effectively and that it complements efforts that are intended to address risks.



Prof S D Maharaj

Chairperson of the Audit and Risk Committee

Date: 24 July 2018

Independent Auditor's Report

To Parliament on the Academy of Science of South Africa

Report on the audit of the financial statements

Opinion

We have audited the financial statements of the Academy of Science of South Africa set out on pages 85 to 114, which comprise the statement of financial position as at 31 March 2018, and the statement of financial performance, statement of changes in net assets, cash flow statement and the statement of comparison of budget and actual amounts for the year then ended, as well as the notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the financial statements present fairly, in all material respects, the financial position of the Academy of Science of South Africa as at 31 March 2018, and its financial performance and cash flows for the year then ended in accordance with the Standards of Generally Recognised Accounting Practice (GRAP) and the requirements of the Academy of Science of South Africa Act, 2001 (Act No 67 of 2001) (ASSAf Act).

Basis for opinion

We conducted our audit in accordance with the International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the auditor's responsibilities for the audit of the financial statements section of our report.

We are independent of the entity in accordance with the Independent Regulatory Board for Auditors' Code of professional conduct for registered auditors (IRBA code) and other independence requirements applicable to performing audits of the financial statements in South Africa. We have fulfilled our other ethical responsibilities in accordance with the IRBA code and in accordance with other ethical requirements applicable to performing audits in South Africa. The IRBA code is consistent with the International Ethics Standards Board for Accountants' Code of ethics for professional accountants (parts A and B). We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of the Accounting Authority

The Council, which constitutes the accounting authority is responsible for the preparation and fair presentation of the financial statements in accordance with GRAP and the requirements of the ASSAf Act and for such internal control as the accounting authority determines necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the accounting authority is responsible for assessing the entity's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless there is an intention either to liquidate the entity or to cease operations, or there is no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is included in the annexure to the auditor's report.

Performance information reporting

The entity is not required to prepare a report on its performance against predetermined objectives as it does not fall within the ambit of the PFMA and such reporting is also not required in terms of the entity's specific legislation.

Report on the audit of compliance with legislation

Introduction and scope

In accordance with the PAA and the general notice issued in terms thereof we have a responsibility to report material findings on the compliance of the entity with specific matters in key legislation. We performed procedures to identify findings but not to gather evidence to express assurance.

The material findings in respect of the compliance criteria for the applicable subject matters are as follows:

ASSAf Act

The entity did not fully comply with section 2(2) of the ASSAF Act which requires that the Academy must comply with the provisions of the Public Finance Management Act, 1999 (Act No 1 of 1999).

Other information

The Academy of Science of South Africa accounting authority is responsible for the other information. The other information comprises the information included in the annual report. The other information does not include the financial statements and the auditor's report.

Our opinion on the financial statements and findings on the compliance with legislation do not cover the other information and we do not express an audit opinion or any form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work we have performed, on the other information obtained prior to the date of this auditor's report, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Internal control deficiencies

We considered internal control relevant to our audit of the financial statements and compliance with legislation, however the objective is not to express any form of assurance thereon. The matters reported below are limited to the significant internal control deficiencies that resulted in the findings on compliance with legislation included in this report.

Leadership

Oversight responsibility with respect to the finalisation of the status of ASSAf in order to determine the framework for the review and monitoring of compliance with legislation was not completed.

Other reports

We draw attention to the following engagements conducted by various parties that have or could potentially have an impact on the matters reported on the entity's financial-, performance- and compliance-related matters. The reports noted do not form part of our opinion on the financial statements or our findings on the compliance with legislation.

Audit-related services and special audits

An agreed-upon procedures engagement was performed relating to the expenditure incurred and income received for the year ended 31 December 2017 by the ICSU ROA for the Building Capacity for Integrated Research on Global Sustainability funded by the Swedish International Development Agency hosted by ASSAf. The report was issued to ASSAf management on the 14th of March 2018.

Auditor tenure

In terms of the IRBA rule published in Government Gazette Number 39475 dated 4 December 2015, we report that SizweNtsalubaGobodo Incorporated has been the auditor of the Academy of Science of South Africa (ASSAf) for four years.



Viwe Tini

Director

SizweNtsalubaGobodo Inc

Registered Auditors

27 July 2018

Annexure – Auditor's responsibility for the audit

As part of an audit in accordance with the ISAs, we exercise professional judgement and maintain professional scepticism throughout our audit of the financial statements and on the entity's compliance with respect to the selected subject matters.

Financial statements

In addition to our responsibility for the audit of the financial statements as described in the auditor's report, we also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the accounting authority.
- Conclude on the appropriateness of the accounting authority's use of the going concern basis of accounting in the preparation of the financial statements. We also conclude, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Academy of Science of South Africa ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements about the material uncertainty or, if such disclosures are inadequate, to modify the opinion on the financial statements. Our conclusions are based on the information available to me at the date of the auditor's report. However, future events or conditions may cause an entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

Communication with those charged with governance

We communicate with the accounting authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also confirm to the accounting authority that we have complied with relevant ethical requirements regarding independence, and communicate all relationships and other matters that may reasonably be thought to have a bearing on our independence, and where applicable, related safeguards.

Council's Report

The Council members submit their report for the year ended 31 March 2018.

1. Incorporation

The entity was incorporated on 22 March 1996 and commenced with its business on the same day.

2. Review of activities

Main business and operations

The entity is engaged in promotion and application of scientific thinking in the service of society and operates principally in South Africa.

The operating results and state of affairs of the entity are fully set out on page 85 to 114 of the accompanying annual financial statements.

3. Going concern

We draw attention to the fact that as at 31 March 2018, the entity had a sustainability fund of R 9,626,740 and that the entity's total liabilities do not exceed its assets

The annual financial statements have been prepared on the going concern basis. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

The ability of the entity to continue as a going concern is dependent on a number of factors. The most significant of these is that the Council members continue to procure funding for the ongoing operations for the entity and note 25 of these annual financial statements will remain in force for so long as it takes to restore the solvency of the entity.

4. Subsequent events

The Council members are not aware of any matter or circumstance arising since the end of the financial year.

5. Council

The Council members of the entity during the year and to the date of this report are as follows:

Name	Nationality	Changes
Prof Jonathan Jansen	South African	appointed: 18 October 2016
Prof Himla Soodyall	South African	appointed: 31 October 2012
Prof Brenda Wingfield	South African	appointed: 31 October 2012
Prof Johann Mouton	South African	appointed: 31 October 2012
Prof Zeblon Vilakazi	South African	appointed: 31 October 2012
Prof Stephanie Burton	South African	appointed: 31 May 2014
Prof Norman Duncan	South African	appointed: 20 February 2015
Dr Shadrack Moephuli	South African	appointed: 20 February 2015
Prof Eugene Cloete	South African	appointed: 14 October 2016
Prof Sabiha Essack	South African	appointed: 14 October 2016
Prof Shireen Hassim	South African	appointed: 14 October 2016
Prof Barney Pityana	South African	appointed: 14 October 2016
Prof Nancy Phaswana-Mafuya	South African	appointed: 14 October 2016

6. Auditors

SizweNtsalubaGobodo Inc will continue in office for the next financial period.

Statement of Financial Position as at 31 March 2018

Figures in Rand	Note(s)	2018	2017 Restated*
Assets			
Current Assets			
Other financial assets	5	8,597,149	7,886,333
Receivables from exchange transactions	6	4,436,607	1,776,768
Receivables from non-exchange transactions	7	-	118,673
Cash and cash equivalents	8	16,221,802	18,659,686
		29,255,558	28,441,460
Non-Current Assets			
Property, plant and equipment	3	329,068	420,011
Intangible assets	4	38,790	105,983
		367,858	525,994
Total Assets		29,623,416	28,967,454
Liabilities			
Current Liabilities			
Payables from exchange transactions	11	7,855,231	7,808,443
ICSU ROA	10	3,562,830	3,942,542
Unspent conditional grants and receipts	9	8,578,615	7,763,750
		19,996,676	19,514,735
Total Liabilities		19,996,676	19,514,735
Net Assets		9,626,740	9,452,719
Reserves			
Sustainability Fund		9,626,740	4,445,084
Operating Fund		-	5,007,635
Total Net Assets		9,626,740	9,452,719

* See Notes

Statement of Financial Performance

Figures in Rand	Note(s)	2018	2017 Restated*
Revenue			
Revenue from exchange transactions			
Fees earned	12	670,302	1,403,236
Interest received	12	1,765,541	1,394,670
Gain on foreign exchange		12,513	-
Fair value adjustments	16	44,077	72,870
Total revenue from exchange transactions		2,492,433	2,870,776
Revenue from non-exchange transactions			
Transfer revenue			
Government grants & subsidies	13	32,620,664	28,688,791
Local grants and donations	12	8,168,534	9,524,165
Foreign grants and donations	12	5,628,789	5,628,417
Total revenue from non-exchange transactions		46,417,987	43,841,373
Total revenue		48,910,420	46,712,149
Expenditure			
Employee related costs	14	(24,469,959)	(25,180,966)
Depreciation and amortisation	3&4	(307,357)	(386,397)
Lease rentals on operating lease	18	(1,831,277)	(1,712,410)
Provision for doubtful debts		(184,004)	(248,961)
Loss on disposal of assets and liabilities		(1,815)	(2,871)
Loss on foreign exchange		-	(72 343)
General Expenses	15	(21,941,987)	(18,474,151)
Total expenditure		(48,736,399)	(46,078,099)
Surplus for the year		174,021	634,050

* See Note

Statement of Changes in Net Assets

Figures in Rand	Sustainability fund	Operating fund	Total reserves	Total net assets
Balance at 01 April 2016	3,811,034	5,007,635	8,818,669	8,818,669
Changes in net assets				
(Deficit) for the year	634,050	-	634,050	634,050
Total changes	634,050	-	634,050	634,050
Restated* Balance at 01 April 2017	4,445,084	5,007,635	9,452,719	9,452,719
Changes in net assets				
Surplus for the year	174,021	-	174,021	174,021
Transfer of operating fund to sustainability fund	5,007,635	(5,007,635)	-	-
Total changes	5,181,656	(5,007,635)	174,021	174,021
Balance at 31 March 2018	9,626,740	-	9,626,740	9,626,740

Cash Flow Statement

Figures in Rand	Note(s)	2018	2017 Restated*
Cash flows from operating activities			
Receipts			
Fees		(1,977,024)	367,606
Grants		46,536,660	49,549,781
Interest income		1,765,541	1,394,670
		46,325,177	51,312,057
Payments			
Employee costs		(24,469,959)	(25,180,966)
Suppliers		(23,475,327)	(14,773,864)
		(47,945,286)	(39,954,830)
Net cash flows from operating activities	19	(1,620,109)	11,357,227
Cash flows from investing activities			
Purchase of property, plant and equipment	3	(151,036)	(45,383)
Acquisition of additional financial assets		(666,739)	(658,876)
Net cash flows from investing activities		(817,775)	(704,259)
Net increase/(decrease) in cash and cash equivalents		(2,437,884)	10,652,968
Cash and cash equivalents at the beginning of the year		18,659,686	8,006,718
Cash and cash equivalents at the end of the year	8	16,221,802	18,659,686

* See Note

Statement of Comparison of Budget and Actual Amounts

Budget on Cash Basis						
	Approved budget	Adjustments	Final Budget	Actual amounts on comparable basis	Difference between final budget and actual	Reference
Figures in Rand						
Statement of Financial Performance						
Revenue						
Revenue from exchange transactions						
Fees earned	382,000	-	382,000	670,302	288,302	28
Interest received - investment	1,200,000	-	1,200,000	1,765,541	565,541	28
Total revenue from exchange transactions	1,582,000	-	1,582,000	2,435,843	853,843	
Revenue from non-exchange transactions						
Transfer revenue						
Government grants & subsidies	28,687,604	2,762,866	31,450,470	32,620,664	1,170,194	28
Local grants and donations	1,540,000	3,225,812	4,765,812	8,168,534	3,402,722	28
Foreign grants and donations	2,722,000	4,576,174	7,298,174	5,628,789	(1,669,385)	28
Total revenue from non-exchange transactions	32,949,604	10,564,852	43,514,456	46,417,987	2,903,531	
Total revenue	34,531,604	10,564,852	45,096,456	48,853,830	3,757,374	
Expenditure						
Personnel	(19,472,240)	-	(19,472,240)	(24,469,959)	(4,997,719)	28
Depreciation and amortisation	-	-	-	(307,357)	(307,357)	
Lease rentals on operating lease	(1,106,584)	-	(1,106,584)	(1,831,277)	(724,693)	28
Debt Impairment	-	-	-	(184,004)	(184,004)	
General Expenses	(13,952,780)	(10,564,852)	(24,517,632)	(21,941,987)	2,575,645	
Total expenditure	(34,531,604)	(10,564,852)	(45,096,456)	(48,734,584)	(3,638,128)	
Operating surplus	-	-	-	119,246	119,246	
Loss on disposal of assets and liabilities	-	-	-	(1,815)	(1,815)	
Gain on foreign exchange	-	-	-	12,513	12,513	
Fair value adjustments	-	-	-	44,077	44,077	
	-	-	-	54,775	54,775	
Surplus before taxation	-	-	-	174,021	174,021	
Actual Amount on Comparable Basis as Presented in the Budget and Actual Comparative Statement	-	-	-	174,021	174,021	

Reconciliation of Actual amounts on a Comparable Basis and Actual amounts on the Annual Financial Statements.
Net Cash flows from

	Operating Activities	Financing Activities	Investing Activities	Total
Actual amounts on comparable basis as presented in the budget and actual comparative statement	(3 638 128)	-	-	(3 638 128)
Basis difference	2 018 019	-	(817 775)	1 200 244
Timing difference	-	-	-	-
Entity difference	-	-	-	-
Actual amount in Cash Flow Statement	(1 620 109)	-	(817 775)	(2 437 884)

Accounting Policies

1. Presentation of Annual Financial Statements

The annual financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practice (GRAP), issued by the Accounting Standards Board in accordance with Section 91(1) of the Public Finance Management Act (Act 1 of 1999).

The annual financial statements have been prepared on an accrual basis of accounting and are in accordance with historical cost convention as the basis of measurement, unless specified otherwise.

A summary of the significant accounting policies, which have been consistently applied in the preparation of these annual financial statements, are disclosed below.

1.1 Presentation currency

The annual financial statements are presented in South African Rand (rounded off to the nearest Rand), which is the functional and presentation currency of the entity.

1.2 Going concern assumption

These annual financial statements have been prepared based on the expectation that the entity will continue to operate as a going concern for at least the next 12 months.

1.3 Significant judgements and sources of estimation uncertainty

In preparing the annual financial statements, management is required to make estimates and assumptions that affect the amounts represented in the annual financial statements and related disclosures. Use of available information and the application of judgement is inherent in the formation of estimates. Actual results in the future could differ from these estimates which may be material to the annual financial statements. Significant judgements include:

Trade receivables / Held to maturity investments and/or loans and receivables

The entity assesses its trade receivables and loans and receivables for impairment at the end of each reporting period. In determining whether an impairment loss should be recorded in surplus or deficit, the surplus makes judgements as to whether there is observable data indicating a measurable decrease in the estimated future cash flows from a financial asset.

The impairment for trade receivables and loans and receivables is calculated on a portfolio basis, based on historical loss ratios, adjusted for national and industry-specific economic conditions and other indicators present at the reporting date that correlate with defaults on the portfolio. These annual loss ratios are applied to loan balances in the portfolio and scaled to the estimated loss emergence period.

Fair value estimation

The fair value of financial instruments traded in active markets (such as trading and available-for-sale securities) is based on quoted market prices at the end of the reporting period. The quoted market price used for financial assets held by the entity is the current bid price.

The fair value of financial instruments that are not traded in an active market (for example, over-the-counter derivatives) is determined by using valuation techniques. The entity uses a variety of methods and makes assumptions that are based on market conditions existing at the end of each reporting period. Quoted market prices or dealer quotes for similar instruments are used for long-term debt. Other techniques, such as estimated discounted cash flows, are used to determine fair value for the remaining financial instruments. The fair value of interest rate swaps is calculated as the present value of the estimated future cash flows. The fair value of forward foreign exchange contracts is determined using quoted forward exchange rates at the end of the reporting period.

The carrying value less impairment provision of trade receivables and payables are assumed to approximate their fair values. The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the entity for similar financial instruments.

Provisions

Provisions were raised and management determined an estimate based on the information available. Additional disclosure of this estimate of provision is included in note 11 – Provision for leave pay and for bonus.

Allowance for doubtful debts

On debtors an impairment loss is recognised in surplus and deficit when there is objective evidence that it is impaired. The impairment is measured at the amount equal to an invoice.

1.4 Property, plant and equipment

The cost of an item of property, plant and equipment is recognised as an asset when:

- it is probable that future economic benefits or service potential associated with the item will flow to the entity; and
- the cost of the item can be measured reliably.

Property, plant and equipment is initially measured at cost.

The cost of an item of property, plant and equipment is the purchase price and other costs attributable to bring the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Trade discounts and rebates are deducted in arriving at the cost.

Where an asset is acquired through a non-exchange transaction, its cost is its fair value as at date of acquisition.

Where an item of property, plant and equipment is acquired in exchange for a non-monetary asset or monetary assets, or a combination of monetary and non-monetary assets, the asset acquired is initially measured at fair value (the cost). If the acquired item's fair value was not determinable, it's deemed cost is the carrying amount of the asset(s) given up.

When significant components of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Costs include costs incurred initially to acquire or construct an item of property, plant and equipment and costs incurred subsequently to add to, replace part of, or service it. If a replacement cost is recog-

nised in the carrying amount of an item of property, plant and equipment, the carrying amount of the replaced part is derecognised.

The initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located is also included in the cost of property, plant and equipment, where the entity is obligated to incur such expenditure, and where the obligation arises as a result of acquiring the asset or using it for purposes other than the production of inventories.

Recognition of costs in the carrying amount of an item of property, plant and equipment ceases when the item is in the location and condition necessary for it to be capable of operating in the manner intended by management.

Items such as spare parts, standby equipment and servicing equipment are recognised when they meet the definition of property, plant and equipment.

Major inspection costs which are a condition of continuing use of an item of property, plant and equipment and which meet the recognition criteria above are included as a replacement in the cost of the item of property, plant and equipment. Any remaining inspection costs from the previous inspection are derecognised.

Property, plant and equipment is carried at cost less accumulated depreciation and any impairment losses.

Property, plant and equipment are depreciated on the straight line basis over their expected useful lives to their estimated residual value.

The useful lives of items of property, plant and equipment have been assessed as follows:

Item	Depreciation method	Average useful life
Furniture and fixtures	Straight line	6 to 7 years
Office equipment	Straight line	6 to 7 years
Computer equipment	Straight line	3 years

The depreciable amount of an asset is allocated on a systematic basis over its useful life.

Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

The depreciation method used reflects the pattern in which the asset's future economic benefits or service potential are expected to be consumed by the entity. The depreciation method applied to an asset is reviewed at least at each reporting date and, if there has been a significant change in the expected pattern of consumption of the future economic benefits or service potential embodied in the asset, the method is changed to reflect the changed pattern. Such a change is accounted for as a change in an accounting estimate.

The entity assesses at each reporting date whether there is any indication that the entity expectations about the residual value and the useful life of an asset have changed since the preceding reporting date. If any such indication exists, the entity revises the expected useful life and/or residual value accordingly. The change is accounted for as a change in an accounting estimate.

The depreciation charge for each period is recognised in surplus or deficit unless it is included in the carrying amount of another asset.

Items of property, plant and equipment are derecognised when the asset is disposed of or when there are no further economic benefits or service potential expected from the use of the asset.

The gain or loss arising from the derecognition of an item of property, plant and equipment is included in surplus or deficit when the item is derecognised. The gain or loss arising from the derecognition of an item of property, plant and equipment is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item.

Assets which the entity holds for rentals to others and subsequently routinely sell as part of the ordinary course of activities, are transferred to inventories when the rentals end and the assets are available-for-sale. Proceeds from sales of these assets are recognised as revenue. All cash flows on these assets are included in cash flows from operating activities in the cash flow statement.

1.5 Intangible assets

An asset is identifiable if it either:

- is separable, i.e. is capable of being separated or divided from an entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable assets or liability, regardless of whether the entity intends to do so; or
- arises from binding arrangements (including rights from contracts), regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

An intangible asset is recognised when:

- it is probable that the expected future economic benefits or service potential that are attributable to the asset will flow to the entity; and
- the cost or fair value of the asset can be measured reliably.

The entity assesses the probability of expected future economic benefits or service potential using reasonable and supportable assumptions that represent management's best estimate of the set of economic conditions that will exist over the useful life of the asset.

Intangible assets are carried at cost less any accumulated amortisation and any impairment losses.

An intangible asset is amortised on a straight line basis over their useful life.

The amortisation period and the amortisation method for intangible assets are reviewed at each reporting date.

Reassessing the useful life of an intangible asset with a finite useful life after it was classified as indefinite is an indicator that the asset may be impaired. As a result the asset is tested for impairment and the remaining carrying amount is amortised over its useful life.

Internally generated brands, mastheads, publishing titles, customer lists and items similar in substance are not recognised as intangible assets.

Internally generated goodwill is not recognised as an intangible asset.

Amortisation is provided to write down the intangible assets, on a straight line basis, to their residual values as follows:

Item	Useful life
Computer software, other	3 years

The entity discloses relevant information relating to assets under construction or development, in the notes to the financial statements (see note).

Intangible assets are derecognised:

- on disposal; or
- when no future economic benefits or service potential are expected from its use or disposal.

The gain or loss arising from the derecognition of an intangible assets is included in surplus or deficit when the asset is derecognised (unless the Standard of GRAP on leases requires otherwise on a sale and leaseback).

1.6 Financial instruments

A derivative is a financial instrument or other contract with all three of the following characteristics:

A financial liability is any liability that is a contractual obligation to:

- deliver cash or another financial asset to another entity; or
- the entity designates at fair value at initial recognition; or
- are held for trading.

Financial instruments at fair value comprise financial assets or financial liabilities that are:

- derivatives;
- combined instruments that are designated at fair value;
- instruments held for trading. A financial instrument is held for trading if:
 - it is acquired or incurred principally for the purpose of selling or repurchasing it in the near-term; or
 - on initial recognition it is part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short term profit-taking;
 - non-derivative financial assets or financial liabilities with fixed or determinable payments that are designated at fair value at initial recognition; and
 - financial instruments that do not meet the definition of financial instruments at amortised cost or financial instruments at cost.

1.7 Employee benefits

Short-term employee benefits

The cost of short-term employee benefits, (those payable within 12 months after the service is rendered, such as paid vacation leave and sick leave, bonuses, and non-monetary benefits such as medical care), are recognised in the period in which the service is rendered and are not discounted.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs.

The expected cost of surplus sharing and bonus payments is recognised as an expense when there is a legal or constructive obligation to make such payments as a result of past performance.

1.8 Revenue from exchange transactions

Measurement

Revenue is measured at the fair value of the consideration received or receivable, net of trade discounts and volume rebates.

Sale of goods

Revenue from the sale of goods is recognised when all the following conditions have been satisfied:

- the entity has transferred to the purchaser the significant risks and rewards of ownership of the goods;
- the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity; and
- the costs incurred or to be incurred in respect of the transaction can be measured reliably.

Rendering of services

When the outcome of a transaction involving the rendering of services can be estimated reliably, revenue associated with the transaction is recognised by reference to the stage of completion of the transaction at the reporting date. The outcome of a transaction can be estimated reliably when all the following conditions are satisfied:

- the amount of revenue can be measured reliably;
- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity;
- the stage of completion of the transaction at the reporting date can be measured reliably; and
- the costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

When services are performed by an indeterminate number of acts over a specified time frame, revenue is recognised on a straight line basis over the specified time frame unless there is evidence that some other method better represents the stage of completion. When a specific act is much more significant than any other acts, the recognition of revenue is postponed until the significant act is executed.

When the outcome of the transaction involving the rendering of services cannot be estimated reliably, revenue is recognised only to the extent of the expenses recognised that are recoverable.

Service revenue is recognised by reference to the stage of completion of the transaction at the reporting date. Stage of completion is determined by the proportion that costs incurred to date bear to the total estimated costs of the transaction.

Revenue from publications, secretarial, consulting, workshop and membership is recognised when it becomes due.

Interest, royalties and dividends

Revenue arising from the use by others of entity assets yielding interest, royalties and dividends or similar distributions is recognised when:

- It is probable that the economic benefits or service potential associated with the transaction will flow to the entity, and
- The amount of the revenue can be measured reliably.

Interest is recognised, in surplus or deficit, using the effective interest rate method.

1.9 Revenue from non-exchange transactions

Recognition

An inflow of resources from a non-exchange transaction is recognised as revenue when funds are received.

Measurement

Revenue from a non-exchange transaction is measured at the amount of the increase in net assets recognised by the entity.

When, as a result of a non-exchange transaction, an entity recognises an asset, it also recognises revenue equivalent to the amount of the asset measured in accordance with GRAP 23 paragraph .41, unless it is also required to recognise a liability. Where a liability is required to be recognised it will be measured in accordance with the requirements of GRAP 23 paragraph .57, and the amount of the increase in net assets, if any, recognised as revenue. When a liability is subsequently reduced, because the taxable event occurs or a condition is satisfied, the amount of the reduction in the liability will be recognised as revenue.

Transfers

Apart from services in kind, which are not recognised, the entity recognises an asset in respect of transfers when the transferred resources meet the definition of an asset and satisfy the criteria for recognition as an asset.

The entity recognises an asset in respect of transfers when the transferred resources meet the definition of an asset and satisfy the criteria for recognition as an asset.

Transferred assets are measured at their fair value as at the date of acquisition.

Grants and subsidies

Grants are recognised as revenue when:

- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity,
- the amount of the revenue can be measured reliably, and
- to the extent that there has been compliance with any restrictions associated with the grant.

The entity assesses the degree of certainty attached to the flow of future economic benefits or service potential on the basis of the available evidence. Certain grants payable by one level of one to another are subject to the availability of funds. Revenue from these grants is only recognised when it is probable that the economic benefits or service potential associated with the transaction will flow to the entity. An announcement at the beginning of a financial year that grants may be available for qualifying entities in accordance with an agreed programme may not be sufficient evidence of the probability of the flow. Revenue is then only recognised once evidence of the probability of the flow becomes available, which in most cases is on receipt.

Restrictions on grants may result in such revenue being recognised on a time proportion basis. Where there is no restriction on the period, such revenue is recognised on receipt or when the act becomes effective, whichever is earlier.

When grants are remitted on a re-imbursement basis, revenue is recognised when the qualifying expense has been incurred and to the extent that any other restrictions have been complied with.

Other grants and donations (Conditional grants, etc.)

Other grants and donations are recognised as revenue when:

- it is probable that the economic benefits or service potential associated with the transaction will flow to the entity;
- the amount of the revenue can be measured reliably; and
- to the extent that there has been compliance with any restrictions associated with the grant.

If goods in-kind are received without conditions attached, revenue is recognised immediately. If conditions are attached, a liability is recognised, which is reduced and revenue recognised as the conditions are satisfied.

1.10 Investment income

Investment income is recognised on a time-proportion basis using the effective interest method.

1.11 Translation of foreign currencies

Foreign currency transactions

A foreign currency transaction is recorded, on initial recognition in Rands, by applying to the foreign currency amount the spot exchange rate between the functional currency and the foreign currency at the date of the transaction.

At each reporting date:

- foreign currency monetary items are translated using the closing rate;
- non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction; and
- non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous annual financial statements are recognised in surplus or deficit in the period in which they arise.

When a gain or loss on a non-monetary item is recognised directly in net assets, any exchange component of that gain or loss is recognised directly in net assets. When a gain or loss on a non-monetary item is recognised in surplus or deficit, any exchange component of that gain or loss is recognised in surplus or deficit.

Cash flows arising from transactions in a foreign currency are recorded in Rands by applying to the foreign currency amount the exchange rate between the Rand and the foreign currency at the date of the cash flow.

1.12 Comparative figures

Comparative figures have been reclassified to conform to changes in presentation in the current year.

1.13 Fruitless and wasteful expenditure

Fruitless expenditure means expenditure which was made in vain and would have been avoided had reasonable care been exercised.

All expenditure relating to fruitless and wasteful expenditure is recognised as an expense in the statement of financial performance in the year that the expenditure was incurred. The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the statement of financial performance.

1.14 Irregular expenditure

Irregular expenditure as defined in section 1 of the PFMA is expenditure other than unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation, including -

- (a) this Act; or
- (b) the State Tender Board Act, 1968 (No 86 of 1968), or any regulations made in terms of the Act; or
- (c) any provincial legislation providing for procurement procedures in that provincial government.

National Treasury practice note no. 4 of 2008/2009 which was issued in terms of sections 76(1) to 76(4) of the PFMA requires the following (effective from 1 April 2008):

Irregular expenditure that was incurred and identified during the current financial and which was condoned before year end and/or before finalisation of the financial statements must also be recorded

appropriately in the irregular expenditure register. In such an instance, no further action is also required with the exception of updating the note to the financial statements.

Irregular expenditure that was incurred and identified during the current financial year and for which condonement is being awaited at year end must be recorded in the irregular expenditure register. No further action is required with the exception of updating the note to the financial statements.

Where irregular expenditure was incurred in the previous financial year and is only condoned in the following financial year, the register and the disclosure note to the financial statements must be updated with the amount condoned.

Irregular expenditure that was incurred and identified during the current financial year and which was not condoned by the National Treasury or the relevant authority must be recorded appropriately in the irregular expenditure register. If liability for the irregular expenditure can be attributed to a person, a debt account must be created if such a person is liable in law. Immediate steps must thereafter be taken to recover the amount from the person concerned. If recovery is not possible, the accounting officer or Council may write off the amount as debt impairment and disclose such in the relevant note to the financial statements. The irregular expenditure register must also be updated accordingly. If the irregular expenditure has not been condoned and no person is liable in law, the expenditure related thereto must remain against the relevant programme/expenditure item, be disclosed as such in the note to the financial statements and updated accordingly in the irregular expenditure register.

1.15 Budget information

Academy of Science of South Africa presents its approved budget on a cash basis and the financial statements on the accrual basis.

The budget is approved on a cash basis by functional classification as well as economic classification.

The approved budget covers the fiscal period from 2017/04/01 to 2018/03/31. The budget and the accounting basis differ.

The financial statements for the entity are prepared on the accrual basis using a classification based on the nature of expenses in the statement of financial performance.

The financial statements differ from the budget, which is approved on the cash basis.

The statement of comparison budget and actual amounts is prepared on a comparable basis to the budget. The reconciliation of the actual comparable amounts to the net cash flows per the cash flow statement is presented on the statement of comparison of budget and actual amounts.

1.16 Related parties

A related party is a person or an entity with the ability to control or jointly control the other party, or exercise significant influence over the other party, or *vice versa*, or an entity that is subject to common control, or joint control.

Control is the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities.

Joint control is the agreed sharing of control over an activity by a binding arrangement, and exists only when the strategic financial and operating decisions relating to the activity require the unanimous consent of the parties sharing control (the venturers).

Related party transaction is a transfer of resources, services or obligations between the reporting entity and a related party, regardless of whether a price is charged.

Significant influence is the power to participate in the financial and operating policy decisions of an entity, but is not control over those policies.

Management are those persons responsible for planning, directing and controlling the activities of the entity, including those charged with the governance of the entity in accordance with legislation, in instances where they are required to perform such functions.

Close members of the family of a person are considered to be those family members who may be expected to influence, or be influenced by, that management in their dealings with the entity.

The entity is exempt from disclosure requirements in relation to related party transactions if that transaction occurs within normal supplier and/or client/recipient relationships on terms and conditions no more or less favourable than those which it is reasonable to expect the entity to have adopted if dealing with that individual entity or person in the same circumstances and terms and conditions are within the normal operating parameters established by that reporting entity's legal mandate.

Where the entity is exempt from the disclosures in accordance with the above, the entity discloses narrative information about the nature of the transactions and the related outstanding balances, to enable users of the entity's financial statements to understand the effect of related party transactions on its annual financial statements.

Notes to the Annual Financial Statements

2. New standards and interpretations

2.1 Standards and interpretations issued, but not yet effective

The entity has not applied the following standards and interpretations, which have been published and are mandatory for the entity's accounting periods beginning on or after 01 April 2018 or later periods:

Standard/Interpretation:	Effective date: Years beginning on or after	Expected impact:
• GRAP 20: Related parties	01 April 2019	Impact is currently being assessed
• GRAP 108: Statutory Receivables	01 April 2019	Impact is currently being assessed
• GRAP 17 (as amended 2016): Property, Plant and Equipment	01 April 2018	Impact is currently being assessed
• GRAP 31 (as amended 2016): Intangible Assets	01 April 2018	Impact is currently being assessed
• Directive 12: The Selection of an Appropriate Reporting Framework by Public Entities	01 April 2018	Impact is currently being assessed

Figures in Rand	2018	2017
-----------------	------	------

3. Property, plant and equipment

	2018			2017		
	Cost /Valuation	Accumulated depreciation and accumulated impairment	Carrying value	Cost/Valuation	Accumulated depreciation and accumulated impairment	Carrying value
Furniture and fixtures	1,507,218	(1,393,591)	113,627	1,507,218	(1,347,062)	160,156
Office equipment	362,769	(300,639)	62,130	347,579	(270,954)	76,625
Computer equipment	992,322	(839,011)	153,311	899,511	(716,281)	183,230
Total	2,862,309	(2,533,241)	329,068	2,754,308	(2,334,297)	420,011

Reconciliation of property, plant and equipment - 2018

	Opening balance	Additions	Disposals	Depreciation	Total
Furniture and fixtures	160,156	-	-	(46,529)	113,627
Office equipment	76,625	15,191	-	(29,686)	62,130
Computer equipment	183,230	135,845	(1,815)	(163,949)	153,311
	420,011	151,036	(1,815)	(240,164)	329,068

Reconciliation of property, plant and equipment - 2017

	Opening balance	Additions	Disposals	Depreciation	Total
Furniture and fixtures	212,777	-	-	(52,621)	160,156
Office equipment	102,446	5,699	-	(31,520)	76,625
Computer equipment	368,811	39,684	(2,871)	(222,394)	183,230
	684,034	45,383	(2,871)	(306,535)	420,011

4. Intangible assets

	2018			2017		
	Cost /Valuation	Accumulated amortisation and accumulated impairment	Carrying value	Cost /Valuation	Accumulated amortisation and accumulated impairment	Carrying value
Computer software, other	410,721	(371,931)	38,790	410,721	(304,738)	105,983

Reconciliation of intangible assets - 2018

	Opening balance	Amortisation	Total
Computer software, other	105,983	(67,193)	38,790

Reconciliation of intangible assets - 2017

	Opening balance	Amortisation	Total
Computer software, other	185,844	(79,861)	105,983

Figures in Rand	2018	2017
-----------------	------	------

5. Other financial assets

Designated at fair value

Stanlib Income Fund	8,597,149	7,886,333
Investment is measured at the value of the listed investment at reporting date.		

Level 1

Stanlib Income Fund	8,597,149	7,886,333
---------------------	-----------	-----------

Financial assets at fair value

Fair value hierarchy of financial assets at fair value

For financial assets recognised at fair value, disclosure is required of a fair value hierarchy which reflects the significance of the inputs used to make the measurements. The fair value hierarchy have the following levels:

Level 1 represents those assets which are measured using unadjusted quoted prices in active markets for identical assets.

Level 2 applies inputs other than quoted prices that are observable for the assets either directly (i.e. as prices) or indirectly (i.e. derived from prices).

Level 3 applies inputs which are not based on observable market data.

6. Receivables from exchange transactions

Trade debtors	814,743	1,382,294
Prepayments	3,723,575	466,990
Deposits	247,170	247,170
Provision for impairments	(397,880)	(319,686)
Project advances	48,999	-
	4,436,607	1,776,768

Credit quality of trade and other receivables

Trade receivables consist of a large number of customers, spread across different industries in the geographical area of the entity. Periodic credit evaluation is performed on the financial condition of accounts receivable and, where appropriate, credit guarantee is increased accordingly. Trade receivables are non-interest bearing and are generally on 30 day collection terms. The maximum exposure to credit risk at the reporting date is the amortised cost of each class of receivable mentioned above.

In determining the recoverability of a receivable, management considers any change in the credit quality of the debtor from the date credit was initially granted up to the reporting date. Any impairment on trade and other receivables (loans and receivables) exists predominantly due to the possibility that these debts will not be recovered. Management assesses these debtors individually for impairment and group them together in the Statement of Financial Position as financial assets with similar credit risk characteristics.

The credit quality of trade receivables that are neither past due nor impaired are considered fair by the company taking into account the historical information available.

Figures in Rand	2018	2017
-----------------	------	------

Trade and other receivables exchange transactions

Trade and other receivables that are outside their normal payment terms are considered to be past due. The following represents an analysis of the past due financial assets.

The ageing of amounts past due is as follows:

Current	3,375,660	1,015,623
30+ days	507,796	-
60+ days	184,206	13,430
90+ days	61,103	40,400
120+ days	705,722	1,027,000

As at 31 March 2018, trade and other receivables of R 184,004 (2017: R 248,961) were impaired.

The amount of the provision was R 397,880 as at 31 March 2018 (2017: R 319,686).

The ageing of these receivables is as follows:

120+ days	397,880	319,686
-----------	---------	---------

Reconciliation of provision for impairment of trade and other receivables

Opening balance	(319,686)	(234,299)
Provision for doubtful debts	(184,004)	(248,961)
Amounts written off as uncollectible	42,187	96,210
Unused amounts reversed	63,623	67,364
	(397,880)	(319,686)

In determining the recoverability of debtors, the allowance for impairment of trade receivables has been made for consumer balances outstanding over 120 days. No further credit allowance is required in excess of the allowance for impairment.

7. Receivables from non-exchange transactions

Public contributions and subsidies	-	118,673
------------------------------------	---	---------

Credit quality of receivables from non-exchange transactions

Periodic credit evaluation is performed on the financial condition of accounts receivable and, where appropriate, credit guarantee is increased accordingly. Trade receivables are non-interest bearing. The maximum exposure to credit risk at the reporting date is the fair value of each class of receivable mentioned above.

In determining the recoverability of a receivable, management considers any change in the credit quality of the debtor from the date credit was initially granted up to the reporting date. Any impairment on trade and other receivables (loans and receivables) exists predominantly due to the possibility that these debts will not be recovered. Management assesses these debtors individually for impairment and group them together in the Statement of Financial Position as financial assets with similar credit risk characteristics.

The credit quality of trade receivables from non-exchange that are neither past due nor impaired are considered fair by the company taking into account the historical information available.

Figures in Rand	2018	2017
-----------------	------	------

Receivables from non-exchange transactions

Other receivables from non-exchange transactions that are outside their normal payment terms are considered to be past due. The following represents an analysis of the past due financial assets.

The ageing of amounts past due is as follows:

30+ days	-	-
60+ days	-	-
90+ days	-	118,673
120+ days	-	-

Receivables from non-exchange transactions impaired

As at 31 March 2018, other receivables from non-exchange transactions of R- (2017: R -) were impaired.

The amount of the provision was R - as of 31 March 2018 (2017: R -).

Reconciliation of provision for impairment of receivables from non-exchange transactions

Opening balance	-	(45,380)
Amounts written off as uncollectible	-	45,380
	-	-

8. Cash and cash equivalents

Cash and cash equivalents consist of:

Bank balances	1,838,027	2,191,924
Short-term deposits	14,383,775	16,467,762
	16,221,802	18,659,686

9. Unspent conditional grants and receipts

Unspent conditional grants and receipts comprises of:

Unspent conditional grants and receipts

Agricultural Research Council (ARC) - Agriculture Education & Training	-	209,696
Deutsche Akademie	498,770	698,822
Department of Science and Technology - Energy Efficiency Technology	656,277	419,762
Department of Science and Technology - Genetics and Genomics	222,078	-
Department of Science and Technology - SCM	-	296,712
Department of Science and Technology - Genetics Engineering	-	29,905
Department of Science and Technology - Hydraulic Fracturing	440,056	313,399
Department of Science and Technology - Lindau Nobel Laureate	618,914	2,112,971
Department of Science and Technology - Postgraduate Engineering	547,370	701,982
Department of Science and Technology - SAAE	-	52,273
European Union - ESASTAP PLUS 2020	166,944	237,813
Global Young Academy	-	72,733
National Research Foundation - African Open Science Platform	2,279,363	1,394,542
National Research Foundation - Third Worldwide Meeting of Young Scientists	37,994	-
National Research Foundation - Skills Development for Women in Science	-	23,541

Figures in Rand	2018	2017
New Zealand Ministry of Foreign Affairs - AMASA 12	-	478,987
UNESCO - GenderInsite	-	720,612
Department of Science and Technology - Energy Management Knowledge	998,708	-
Department of Science and Technology - Innovation for Inclusive Development	798,555	-
Department of Science and Technology - International Cooperation & Intra Academy in Africa	1,313,586	-
	8,578,615	7,763,750
Movement during the year		
Agricultural Research Council		
Balance at the beginning of the year	209,696	-
Additions during the year	-	270,000
Revenue recognition during the year	(209,696)	(60,304)
Balance at end of the year	-	209,696
Campaign for Tobacco Free Kids		
Balance at the beginning of the year	-	103,296
Additions during the year	-	-
Revenue recognition during the year	-	(103,296)
Balance at end of the year	-	-
Deutsche Akademie		
Balance at the beginning of the year	698,822	-
Additions during the year	2,426,023	2,980,028
Revenue recognition during the year	(1,972,341)	(2,281,206)
Refund during the year	(653,734)	-
Balance at end of the year	498,770	698,822
Department of Science and Technology - Energy Efficiency Technology		
Balance at the beginning of the year	419,762	-
Additions during the year	300,000	700,000
Revenue recognition during the year	(63,485)	(280,238)
Balance at end of the year	656,277	419,762
Department of Science and Technology - SCM		
Balance at the beginning of the year	296,712	-
Additions during the year	-	1,000,000
Revenue recognition during the year	(296,712)	(703,288)
Balance at the end of the year	-	296,712
Department of Science and Technology - Genetics Engineering		
Balance at the beginning of the year	29,905	149,997
Revenue recognition during the year	(18,785)	(120,092)
Refund during the year	(11,120)	-
Balance at end of the year	-	29,905
Department of Science and Technology - Hydraulic Fracturing		
Balance at the beginning of the year	313,399	313,399
Additions during the year	1,798,526	-
Revenue recognition during the year	(1,671,869)	-
Balance at end of the year	440,056	313,399

Figures in Rand	2018	2017
Department of Science and Technology - Lindau Nobel Laureate		
Balance at the beginning of the year	2,112,971	1,544,817
Additions during the year	-	1,842,280
Revenue recognition during the year	(1,494,057)	(1,274,126)
Balance at end of the year	618,914	2,112,971
Department of Science and Technology - Postgraduate Engineering		
Balance at the beginning of the year	701,982	-
Additions during the year	-	1,000,000
Revenue recognition during the year	(154,612)	(298,018)
Balance at end of the year	547,370	701,982
Department of Science and Technology - SAAE		
Balance at the beginning of the year	52,273	-
Additions during the year	-	150,000
Revenue recognition during the year	(52,273)	(97,727)
Balance at end of the year	-	52,273
Department of Science and Technology - Energy Knowledge Management		
Balance at the beginning of the year	-	-
Additions during the year	1,000,000	-
Revenue recognition during the year	(1,292)	-
Balance at the end of the year	998,708	-
Department of Science and Technology - Genetics and Genomics		
Balance at the beginning of the year	-	-
Additions during the year	300,000	-
Revenue recognition during the year	(77,922)	-
Balance at the end of the year	222,078	-
Department of Science and Technology - Innovation for Inclusive Development		
Balance at the beginning of the year	-	-
Additions during the year	999,900	-
Revenue recognition during the year	(201,345)	-
Balance at the end of the year	798,555	-
Department of Science and Technology - International Cooperation and Intra Academy in Africa		
Balance at the beginning of the year	-	-
Additions during the year	1,500,000	-
Revenue recognition during the year	(186,414)	-
Balance at the end of the year	1,313,586	-
Department of Science and Technology - Science Advice Workshop		
Balance at the beginning of the year	-	363,324
Additions during the year	-	-
Revenue recognition during the year	-	(363,324)
Balance at end of the year	-	-
European Union - ESASTAP PLUS 2020		
Balance at the beginning of the year	237,813	-
Additions during the year	-	302,376
Revenue recognition during the year	(70,869)	(64,563)
Balance at end of the year	166,944	237,813

Figures in Rand	2018	2017
Global Young Academy		
Balance at the beginning of the year	72,733	-
Additions during the year	-	73,392
Revenue recognition during the year	(72,733)	(659)
Balance at end of the year	-	72,733
National Research Foundation - African Open Science Platform		
Balance at the beginning of the year	1,394,542	-
Additions during the year	2,588,270	1,844,500
Revenue recognition during the year	(1,703,449)	(449,958)
Balance at end of the year	2 279,363	1,394,542
National Research Foundation - Skills Development for Women in Science		
Balance at the beginning of the year	23,541	136,042
Additions during the year	-	-
Revenue recognition during the year	(23,541)	(112,501)
Balance at end of the year	-	23,541
National Research Foundation - Third Worldwide Meeting of Young Scientists		
Balance at the beginning of the year	-	-
Additions during the year	350,000	-
Revenue recognition during the year	(312,006)	-
Balance at end of the year	37,994	-
New Zealand Ministry of Foreign Affairs - AMASA 12		
Balance at the beginning of the year	478,987	-
Additions during the year	-	584,652
Revenue recognition during the year	(478,987)	(105,665)
Balance at end of the year	-	478,987
UNESCO - Genderinsite		
Balance at the beginning of the year	720,612	-
Additions during the year	575,433	1 570,161
Revenue recognition during the year	(1,296,045)	(849,549)
Balance at end of the year	-	720,612
University of Auckland - Science Advice Workshop		
Balance at the beginning of the year	-	125,000
Additions during the year	-	-
Refund during the year	-	(125,000)

Figures in Rand	2018	2017
10. International Council for Science - Regional Office Africa (ICSU ROA)		
International Council for Science - Regional Office for Africa (ICSU ROA) is an entity being hosted by ASSAf for a duration of five years from 1 May 2015 to 30 April 2020 and it is not funded from ASSAf's budget.		
Reconciliation		
Opening balance	3,942,542	3,932,660
Amounts received during the year	6,855,747	8,267,544
Expenditure incurred during the year	(7,235,459)	(8,257,662)
	3,562,830	3,942,542
11. Payables from exchange transactions		
Trade payables	1,363,038	1,074,510
Income received in advance	3,349,801	3,859,772
Claims and disbursements	-	22,095
Unallocated receipts	73,443	31,565
Provision for leave pay	1,196,375	1,181,575
Accrued expenses	76,850	2,134
Provision for bonus	1,795,724	1,636,792
	7,855,231	7,808,443
12. Revenue		
Fees earned	670,302	1,403,236
Interest received	1,765,541	1,394,670
Government grants & subsidies	32,620,664	28,688,791
Local grants and donations	8,168,534	9,524,165
Foreign grants and donations	5,628,789	5,628,417
	48,853,830	46,639,279
The amount included in revenue arising from exchanges of goods or services are as follows:		
Publication fees	401,839	350,809
Consulting fees	92,140	885,060
Membership fees	95,800	90,400
Other income		
Bad debts recovered	63,623	67,364
Insurance recoveries	-	9,303
Sundry recoveries	16,900	300
	670,302	1,403,236
The amount included in revenue arising from non-exchange transactions is as follows:		
Taxation revenue		
Transfer revenue		
Government grants & subsidies	32,620,664	28,688,791
Local grants and donations	8,168,534	9,524,165
Foreign grants and donations	5,628,789	5,628,417
	46,417,987	43,841,373

Figures in Rand	2018	2017
13. Government grants and subsidies		
Operating grants		
Department of Science and Technology - Baseline	25,557,712	23,809,290
Department of Science and Technology - Contract funding	4,082,053	3,519,920
National Research Foundation	2,661,203	1,224,250
Agricultural Research Council	209,696	60,304
South African Medical Research Council	50,000	75,027
Technology Innovation Agency	60,000	-
	32,620,664	28,688,791
14. Employee-related costs		
Basic	19,215,545	20,009,748
Bonus	1,690,729	1,636,792
Medical aid	309,834	329,337
Unemployment Insurance Fund	142,316	132,871
Workers Compensation Assistance	49,101	88,828
Skills Development Levy	193,186	179,907
Other payroll levies	44,253	82,564
Defined contribution plans	2,824,995	2,720,919
	24,469,959	25,180,966
15. General expenses		
Accounting fees	-	22,800
Advertising	-	62,244
Auditors remuneration	378,121	323,397
Bank charges	68,243	75,746
Cleaning	15,082	57,586
Computer expenses	73,293	125,847
Consulting and professional fees	631,157	723,535
Consumables	12,347	219
Gifts	16,268	25,902
Insurance	117,323	158,263
Conferences and seminars	225,917	106,490
IT expenses	466,734	362,698
Magazines, books and periodicals	8,625	183,682
Placement fees	114,703	-
Productions	30,800	45,828
Postage and courier	4,413	4,600
Printing and stationery	500,882	189,094
Promotions	32,645	21,779
Repairs and maintenance	18,269	11,499
Research and development costs	-	288,000
Security services	8,246	7,840
Staff welfare	39,499	21,546
Subscriptions and membership fees	16,114	1,988
Telephone and fax	105,860	99,605
Training	81,692	88,760
Travel - local and overseas	1,624,659	222,998
Project Expenditure	17,168,932	15,073,440
Office expenses	57,087	56,714
Casual workers	4,550	7,193
Layout and design	48,475	5,570
Catering and refreshments	29,120	29,707
Other expenses	42,931	69,581
	21,941,987	18,474,151

Figures in Rand	2018	2017
16. Fair value adjustments		
Other financial assets		
• Fair value adjustments - investment	44,077	72,870
17. Auditors' remuneration		
Fees	378,121	323,397
18. Lease Rentals on Operating Leases		
Premises	1,791,597	1,690,767
Photocopier	39,680	21,643
	1,831,277	1,712,410
19. Cash (used in) generated from operations		
Surplus	174,021	634,050
Adjustments for:		
Depreciation and amortisation	307,357	386,397
Loss on disposal of assets	1,815	2,871
Fair value adjustments	(44,077)	(72,870)
Debt impairment	184,004	248,961
Changes in working capital:		
Receivables from exchange transactions	(2,659,839)	(1,035,630)
Provision for impairment of debtors	(184,004)	(248,961)
Other receivables from non-exchange transactions	118,673	691,490
Payables from exchange transactions	46,788	5,713,163
ICSU ROA	(379,712)	9,881
Unspent conditional grants and receipts	814,865	5,027,875
	(1,620,109)	11,357,227
20. Commitments		
This committed expenditure relates to office rent and parking bays.		
Operating leases - as lessee (expense)		
Minimum lease payments due		
- within one year	364,238	387,433
- in second to fifth year inclusive	-	-
- later than five years	-	-
Minimum lease payments due		
- within one year	43,287	43,287
- in second to fifth year inclusive	21,643	64,930
	429,169	495,650

Operating lease payments represent rentals payable by the entity for office rent and parking bays for ASSAf and ICSU ROA. ASSAf's lease duration is from July 2017 to June 2018 and ICSU ROA lease duration is from September 2017 to August 2018. Monthly lease payment amount to R91,681 for ASSAf and R17,839 for ICSU ROA. No contingent rent is payable.

Operating lease payments represent rentals payable by the entity for photocopier for ASSAf. ASSAf's lease duration is from 15 September 2016 to 14 September 2019. Monthly lease payment amount to R3,607.25. No contingent is payable.

Figures in Rand	2018	2017
21. Related parties		
Relationships		
Controlling entity	Department of Science and Technology	
Group Entities	Council for Scientific and Industrial Research Human Science Research Council National Advisory Council on Innovation National Research Foundation South African Council Agency for Natural Scientific Professions South African National Space Agency Technology Innovation Agency	
ASSAf Council Members	Prof H Soodyall Prof B Wingfield Prof J Mouton Prof S Burton Dr S Moephuli Prof Z Vilakazi Prof N Duncan Prof E Cloete Prof S Essack Prof S Hassim Prof J Jansen Prof N Phaswana-Mafuya Prof B Pityana	
Members of key management	Prof R Diab Mr M Chiloane Mr S Maphosa Mrs L Du Plessis Mrs P Scholtz Mrs S Veldsman	
Related party balances		
Unspent conditional grants		
Department of Science and Technology	5,595,545	3,927,004
National Research Foundation	2,317,357	1,418,083
Agricultural Research Council	-	209,696
Receivables from exchange transactions		
Department of Science and Technology	92,140	885,060
Council for Scientific and Industrial Research	14,052	-
Income received in advance		
Department of Science and Technology	2,443,702	2,454,905
National Research Foundation	-	350,000
Related party transactions		
Grants received		
Department of Science and Technology	29,639,765	26,972,831
National Research Foundation	2,661,203	1,224,251

Figures in Rand	2018	2017
Agricultural Research Council	209,696	60,304
Technology Innovation Agency	60,000	-
Income from publications		
Council for Scientific and Industrial Research	14,052	32,220
Expenditure incurred		
Council for Scientific and Industrial Research	31,646	143,817
Human Science Research Council	70,000	59,647
National Research Foundation	-	3,634

Remuneration of management**Executive management****2018**

	Basic salary	Bonuses and performance related payments	Other short-term employee benefits	Other benefits received	Total
Name					
Prof R Diab - Executive Officer	1,703,638	141,970	9,000	-	1,854,608
Dr X Mati - Manager Governance & National Liaison	-	-	-	262,674	262,674
Morakeng Chiloane - Manager Finance	1,285,805	107,151	6,000	-	1,398,956
Mrs L du Plessis - Manager Human Resource	878,785	73,232	6,000	-	958,017
Mrs P Scholtz - Manager Communications	878,785	73,232	6,000	-	958,017
Mr S Maphosa - Manager International Liaison	1,028,160	83,073	6,000	-	1,117,233
Mrs S Veldsman - Manager Scholarly Publishing	974,751	81,229	6,000	-	1,061,980
	6,749,924	559,887	39,000	262,674	7,611,485

2017

	Basic salary	Other short-term employee benefits	Total
Name			
Prof R Diab - Executive Officer	1,630,276	9,000	1,639,276
Dr X Mati - Manager Governance & National Liaison	984,949	9,000	993,949
Mr M Chiloane - Financial Manager	1,230,436	6,000	1,236,436
Mrs L du Plessis - Manager Human Resource	829,043	6,000	835,043
Mrs P Scholtz - Manager Communications	829,043	6,000	835,043
Mr S Maphosa - Manager International Liaison	885,100	6,000	891,100
Mrs S Veldsman - Manager Scholarly Publishing	874,307	6,000	880,307
	7,263,154	48,000	7,311,154

Figures in Rand	2018	2017
-----------------	------	------

22. Council members' emoluments

No emoluments were paid to the members or any individuals holding a prescribed office during the year.

23. Comparative figures

Comparative figures have been restated to facilitate correct disclosure.

24. Risk management

Financial risk management

Liquidity risk

Prudent liquidity risk management implies maintaining sufficient cash and marketable securities, the availability of funding through an adequate amount of committed credit facilities and the ability to close out market positions. Due to the dynamic nature of the underlying businesses, entity treasury maintains flexibility in funding by maintaining availability under committed credit lines.

The entity's risk to liquidity is a result of the funds available to cover future commitments. The entity manages liquidity risk through an ongoing review of future commitments and credit facilities.

Cash flow forecasts are prepared and adequate utilised borrowing facilities are monitored.

Credit risk

Credit risk consists mainly of cash deposits, cash equivalents, derivative financial instruments and trade debtors. The entity only deposits cash with major banks with high quality credit standing and limits exposure to any one counter-party.

Trade receivables comprise a widespread customer base. Management evaluated credit risk relating to customers on an ongoing basis. If customers are independently rated, these ratings are used. Otherwise, if there is no independent rating, risk control assesses the credit quality of the customer, taking into account its financial position, past experience and other factors. Individual risk limits are set based on internal or external ratings in accordance with limits set by the Council. The utilisation of credit limits is regularly monitored.

Foreign exchange risk

The entity receives grants in foreign denomination. Foreign exchange risk arises from funding received in foreign currency.

The entity does not hedge foreign exchange fluctuations.

25. Going concern

The annual financial statements have been prepared on the going concern basis. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

Figures in Rand	2018	2017
-----------------	------	------

26. Events after the reporting date

Council is not aware of any material events that would impact the reporting of the annual financial statements.

The annual financial statements have been authorised for issue by the Council on the 25 July 2018, as the audit opinion was provided on those annual financial statements.

27. Irregular expenditure

Details of irregular expenditure

There are instances where the Academy has not complied with the requirements of section 51(1)(a)(iii) of the Public Finance Management Act No 1 of 1999, National Treasury Practice Notes and the Preferential Procurement Policy Framework Act No 5 of 2000.

Until clarity is obtained on the entity's legal status and the consequent requirements, additional information relating to instances of irregular expenditure incurred is not disclosed.

28. Budget differences

Differences between actual and budgeted values basis of preparation and presentation

The budget and accounting basis differ. The financial statements are prepared on the accrual basis using a classification on the nature of expenses in the statement of financial performance. The financial statements differ from the budget, which is approved on the cash basis.

The amounts in the annual financial statements were recast from the accrual basis to the cash basis and reclassified by functional classification to be on the same basis as the final approved budget.

The variance between the actual and budgeted values are explained as follows:

The budget is approved on a cash basis by functional classification. The approved budget covers the period from 1 April 2017 to 31 March 2018.

The variance on the budget was as a result of the following;

- 28.1 Fees earned. Favourable variance of 75%. Adverts on *Quest* magazine drastically increased.
- 28.2 Interest received. Favourable variance of 47%. This was as a result of interest capitalisation as well as increase in cash and cash equivalent in the first half of the current financial year.
- 28.3 Government grants and subsidies. Favourable variance of approximately 4%. This was as a result of additional grant funding secured during the year.
- 28.4 Local grants and donations. Favourable variance of 71%. This was as a result of additional grant funding secured during the year, including ICSU ROA an entity hosted by ASSAf .
- 28.5 Foreign grants and donations. Unfavourable variance of approximately 23%. This was as a result of revenue recognition which was supposed to be linked to expenditure in accordance with the required GRAP accounting framework.
- 28.6 Personnel costs. Unfavourable variance of approximately 26%. This was as a result of the annual salary increase as well as the incorporation of ICSU ROA staff in ASSAf's payroll.

Figures in Rand	2018	2017
28.7 Lease rentals on operating lease. Unfavourable variance of approximately 65%. This was as a result of a separate lease agreement that had to be signed on behalf of ICSU ROA and concluding a photocopier lease agreement.		
28.8 General expenses. Favourable variance of approximately 11%. This was as a result of suppliers delaying finalisation of conference events although a deposit was paid and receiving some grants funding late at the end of the current financial year.		



Academy of Science of South Africa
August 2018

ISBN 978-0-9947117-9-3

DOI <http://dx.doi.org/10.17159/assaf.2018/0024>

Published by:
Academy of Science of South Africa (ASSAf)
PO Box 72135, Lynnwood Ridge, Pretoria, South Africa, 0040
Tel: +27 12 349 6600 Fax: +27 86 576 9520
E-mail: admin@assaf.org.za

Reproduction is permitted, provided the source and publisher are appropriately acknowledged.

The Academy of Science of South Africa (ASSAf) was inaugurated in May 1996. It was formed in response to the need for an Academy of Science consonant with the dawn of democracy in South Africa: activist in its mission of using science and scholarship for the benefit of society, with a mandate encompassing all scholarly disciplines that use an open-minded and evidence-based approach to build knowledge. ASSAf thus adopted in its name the term 'science' in the singular as reflecting a common way of enquiring rather than an aggregation of different disciplines. Its Members are elected on the basis of a combination of two principal criteria, academic excellence and significant contributions to society.

The Parliament of South Africa passed the Academy of Science of South Africa Act (No 67 of 2001), which came into force on 15 May 2002. This made ASSAf the only academy of science in South Africa officially recognised by government and representing the country in the international community of science academies and elsewhere.