

# ASSAf

2015/2016

## ANNUAL REPORT



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& technology

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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 (Act 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.

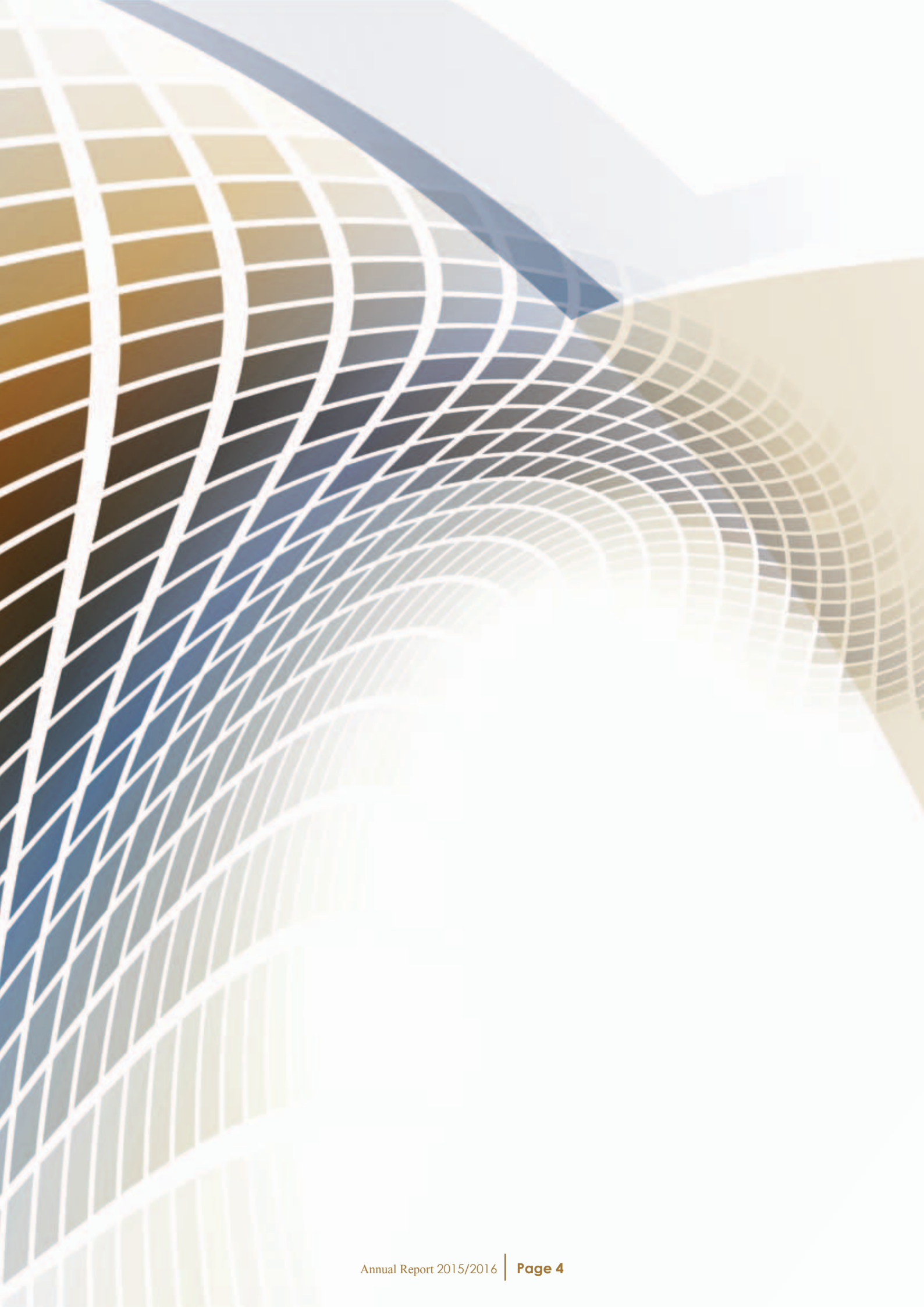


**ASSAf**

**2015/2016**

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# Contents

<b>List of Tables</b>	<b>6</b>
<b>Abbreviations &amp; Acronyms</b>	<b>7</b>
<b>Message – President</b>	<b>10</b>
<b>Molaetsa Wa Moporesidente Pegelo Ya ASSAf Ya Ngwaga Le Ngwana 2015 – 2016</b>	<b>12</b>
<b>Message – Executive Officer</b>	<b>14</b>
<b>Part A: Strategic Overview</b>	<b>17</b>
<b>1 Vision</b>	<b>17</b>
<b>2 Mission</b>	<b>17</b>
<b>3 Values</b>	<b>17</b>
<b>4 Legislative and Other Mandates</b>	<b>18</b>
<b>5 Organisational Structure</b>	<b>18</b>
<b>6 Council</b>	<b>19</b>
<b>6.1 Council Composition</b>	<b>19</b>
<b>6.2 Council Meeting Attendance</b>	<b>23</b>
<b>Part B: Performance Information</b>	<b>24</b>
<b>1 Overview</b>	<b>24</b>
<b>1.1 Service Delivery Environment</b>	<b>24</b>
<b>1.2 Alignment with Government Policies</b>	<b>24</b>
<b>1.3 Significant Developments/Major Projects</b>	<b>26</b>
<b>1.4 Service Delivery Improvement Plan</b>	<b>26</b>
<b>1.5 Strategic Outcome-oriented Goals</b>	<b>26</b>
<b>2 Performance Information by Programme</b>	<b>27</b>
<b>2.1 Programme 1: Governance and Administration Programme</b>	<b>27</b>
<b>2.1.1 Good Governance</b>	<b>27</b>
<b>2.1.2 Diversification of Academy Membership</b>	<b>27</b>

2.1.3	Recognition of Excellence _____	29
2.2	Programme 2: Communication Programme ____	31
2.2.1	Marketing _____	31
2.2.2	Public Awareness of Science _____	32
2.3	Programme 3: Liaison Programme _____	33
2.3.1	International and Regional Collaboration ____	33
2.3.2	Young Scientist Activities _____	38
2.3.3	Gender and Science, Technology and Innovation _____	39
2.4	Programme 4: Policy Advisory Programme ____	42
2.4.1	Health Studies _____	42
2.4.2	Biosafety and Biosecurity Studies _____	44
2.4.3	Energy and Environment Studies _____	45
2.4.4	Education Studies _____	45
2.4.5	Humanities Studies _____	46
2.4.6	Poverty Studies _____	46
2.5	Programme 5: Publications Programme _____	47
2.5.1	South African Journal of Science _____	47
2.5.2	Quest: Science for South Africa _____	49
2.6	Programme 6: Scholarly Publishing Programme _____	50
2.6.1	Access to Knowledge Resources _____	50
2.6.2	Quality Assurance of Journals, Books and Collected Works in South Africa _____	52
2.6.3	Research Publishing _____	53
3	Performance Information: South African Young Academy of Science _____	55
3.1	Introduction _____	55
3.2	New SAYAS Members Inaugurated _____	55
3.3	SAYAS General Assembly _____	55
3.4	Youth Perspectives on Science Advice _____	56
3.5	TWAS-ROSSA/ASSAf Young Scientists' Conference _____	56



3.6	SAYAS Hosts Roadshows_____	56
3.7	SAYAS Blog_____	56
3.8	Science & Society in Africa Symposium _____	57
3.9	Africa Science Leadership Programme 2016 Fellows_____	57
4	<b>Performance Information: South African Academy of Engineering</b> _____	58
4.1	Academy Lectures_____	59
4.2	Workshop for Members of the Academy _____	59
4.3	Induction of New Fellows _____	59
4.4	Colloquium on an Engineering Perspective on Food Security_____	59
4.5	Council of Academies of Engineering and Technological Sciences (CAETS)_____	59
4.6	Cooperation with ASSAf _____	59
	<b>Part C: Financial Information</b> _____	61
	Annual Financial Statements for the Year Ended 31 March 2016 _____	61
	Independent Auditor's Report to Parliament on the Academy of Science of South Africa _____	62
	General Information _____	64
	Council's Responsibilities and Approval_____	65
	Audit & Risk Committee Report _____	66
	Council's Report_____	67
	Statement of Financial Position _____	68
	Statement of Financial Performance _____	69
	Statement of Changes in Net Assets _____	70
	Cash Flow Statement _____	71
	Statement of Comparison of Budget and Actual Amounts _____	72
	Accounting Policies _____	74
	Notes to the Annual Financial Statements _____	85
	<b>Annexure A: ASSAf Member Biographies</b> _____	99
	<b>Annexure B: SAYAS Member Biographies</b> _____	119
	<b>Annexure C: SAAE Member Biographies</b> _____	122

# List of Tables

Table 1: Programme 1: Performance Indicators for the 2015/16 Financial Year	31
Table 2: Programme 2: Performance Indicators for the 2015/16 Financial Year	33
Table 3: Programme 3: Performance Indicators for the 2015/16 Financial Year	41
Table 4: Programme 4: Performance Indicators for the 2015/16 Financial Year	47
Table 5: Programme 5: Performance Indicators for the 2015/16 Financial Year	50
Table 6: Programme 6: Performance Indicators for the 2015/16 Financial Year	54



# Abbreviations & Acronyms

<b>AAS</b>	African Academy of Sciences
<b>Acatech</b>	German National Academy of Science and Engineering
<b>AET</b>	Agricultural Education and Training
<b>AIMS</b>	African Institute for Mathematical Sciences
<b>AMASA</b>	Annual Meeting of African Science Academies
<b>ANSB</b>	<i>Académie Nationale des Sciences du Burkina</i>
<b>ANSTC</b>	<i>Académie Nationale des Sciences et Technologies du Congo</i>
<b>ARC</b>	Agricultural Research Council
<b>ASADA</b>	Africa's Science Academy Development Agenda
<b>ASADI</b>	African Science Academy Development Initiative
<b>ASLP</b>	Africa Science Leadership Programme
<b>ASSAf</b>	Academy of Science of South Africa
<b>AU</b>	African Union
<b>BRICS</b>	Brazil, Russia, India, China, South Africa
<b>CAETS</b>	Council of Academies of Engineering and Technological Sciences
<b>CAPRISA</b>	Centre for the AIDS Programme of Research in South Africa
<b>CHE</b>	Council on Higher Education
<b>COE</b>	Centre of Excellence
<b>COHORT</b>	Committee of Heads of Organisations for Research and Technology
<b>CREST</b>	Centre for Research on Science and Technology
<b>CSPISA</b>	Committee on Scholarly Publishing in South Africa
<b>CSIR</b>	Council for Scientific and Industrial Research
<b>DHET</b>	Department of Higher Education and Training
<b>DOAJ</b>	Directory of Open Access Journals
<b>DOI</b>	Digital object identifier
<b>DST</b>	Department of Science and Technology
<b>DVC</b>	Deputy Vice-Chancellor
<b>EAS</b>	Ethiopian Academy of Sciences
<b>EC</b>	European Commission
<b>ERC</b>	Energy Research Centre
<b>ESASTAP</b>	European-South African Science and Technology Advancement Programme
<b>EU</b>	European Union
<b>EYAS</b>	Egyptian Young Academy of Science
<b>FP7</b>	Seventh Framework Programme
<b>GIZ</b>	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>
<b>GM</b>	Genetic modification
<b>GYA</b>	Global Young Academy
<b>HEI</b>	Higher education institution
<b>HPCSA</b>	Health Professions Council of South Africa
<b>HSRC</b>	Human Sciences Research Council
<b>IAC</b>	InterAcademy Council
<b>IAMP</b>	InterAcademy Medical Panel
<b>IANAS</b>	Inter-American Network of Academies of Science
<b>IAP</b>	InterAcademy Partnership
<b>INAE</b>	Indian National Academy of Engineering
<b>INGSA</b>	International Network for Governmental Science Advice
<b>IBSE</b>	Inquiry-based science education
<b>ICSU</b>	International Council for Science

<b>ICSU ROA</b>	ICSU Regional Office for Africa
<b>INSA</b>	Indian National Science Academy
<b>KNAS</b>	Kenyan National Academy of Sciences
<b>LGBTI</b>	Lesbian, gay, bisexual, transgender and intersex
<b>M&amp;E</b>	Monitoring and evaluation
<b>MatCH</b>	Maternal Adolescent and Child Health Unit
<b>MNS</b>	Mental, neurological and substance use
<b>MoA</b>	Memorandum of agreement
<b>MoU</b>	Memorandum of understanding
<b>MRC</b>	Medical Research Council
<b>MTEF</b>	Medium-term Expenditure Framework
<b>NACI</b>	National Advisory Council on Innovation
<b>NAS</b>	Nigerian Academy of Science
<b>NASAC</b>	Network of African Science Academies
<b>NDP</b>	National Development Plan
<b>Necsa</b>	South African Nuclear Energy Corporation
<b>NGO</b>	Non-governmental organisation
<b>NHI</b>	National Health Insurance
<b>NHLS</b>	National Health Laboratory Service
<b>NMMU</b>	Nelson Mandela Metropolitan University
<b>NRF</b>	National Research Foundation
<b>NSBPF</b>	National Scholarly Book Publishers' Forum
<b>NSEF</b>	National Scholarly Editors' Forum
<b>NSI</b>	National System of Innovation
<b>NSTF</b>	National Science and Technology Forum
<b>NSW</b>	National Science Week
<b>NYAs</b>	National Young Academies
<b>OA</b>	Open access
<b>OAPEN</b>	Open Access Publishing in European Networks
<b>OJS</b>	Open Journal Systems
<b>OWSD</b>	Organisation for Women in Science in the Developing World
<b>PASA</b>	Publishers Association of South Africa
<b>PDEs</b>	Partial differential equations
<b>RAE</b>	Royal Academy of Engineering
<b>R&amp;D</b>	Research and development
<b>RECORD</b>	Renewable Energy Centre of Research and Development
<b>RU</b>	Rhodes University
<b>SAAE</b>	South African Academy of Engineering
<b>SAAO</b>	South African Astronomical Observatory
<b>SAASTA</b>	South African Agency for Science and Technology Advancement
<b>SADAG</b>	South African Depression and Anxiety Group
<b>SADC</b>	Southern African Development Community

<b>SAICE</b>	South African Institution of Civil Engineering
<b>SANEDI</b>	South African National Energy Development Institute
<b>SAJS</b>	<i>South African Journal of Science</i>
<b>SAYAS</b>	South African Young Academy of Science
<b>SciELO</b>	Scientific Electronic Library Online
<b>SciELO SA</b>	Scientific Electronic Library Online South Africa
<b>SciSTIP</b>	Scientometrics and Science, Technology and Innovation Policy
<b>SCSfRPI</b>	Standing Committee on Science for the Reduction of Poverty and Inequality
<b>SETMI</b>	Science, Engineering and Technology Management and Innovation
<b>SITE</b>	Science, innovation, technology and engineering
<b>SfS</b>	Science for Society
<b>SKA</b>	Square Kilometre Array
<b>SNAS</b>	Sudanese National Academy of Sciences
<b>SPP</b>	Scholarly Publishing Programme
<b>SPU</b>	Scholarly Publishing Unit
<b>SSA</b>	Sub-Saharan Africa
<b>S&amp;T</b>	Science and technology
<b>STEM</b>	Science, technology, engineering and mathematics
<b>STI</b>	Science, technology and innovation
<b>STIAS</b>	Stellenbosch Institute for Advanced Study
<b>SU</b>	Stellenbosch University
<b>SURMEPI</b>	Stellenbosch University Rural Medical Education Partnership Initiative
<b>TIA</b>	Technology Innovation Agency
<b>TUT</b>	Tshwane University of Technology
<b>TWAS</b>	The World Academy of Sciences
<b>TWAS-ROSSA</b>	TWAS Regional Office for sub-Saharan Africa
<b>UCT</b>	University of Cape Town
<b>UFS</b>	University of the Free State
<b>UKZN</b>	University of KwaZulu-Natal
<b>UNAS</b>	Uganda National Academy of Sciences
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organisation
<b>Unisa</b>	University of South Africa
<b>UP</b>	University of Pretoria
<b>US NAS</b>	United States National Academies of Sciences
<b>UWC</b>	University of the Western Cape
<b>VC</b>	Vice-Chancellor
<b>WEF</b>	World Economic Forum
<b>WG</b>	Working Group
<b>WoK</b>	Web of Knowledge
<b>WoS</b>	Web of Science
<b>WSSF</b>	World Social Science Forum
<b>ZAS</b>	Zimbabwe Academy of Sciences
<b>ZYMYAS</b>	Zimbabwe Young Academy of Sciences

# Message President

The latter part of this reporting period sees the Academy of Science of South Africa ushering in the twentieth year of its existence. Particularly since it became a statutory body with the passing of the ASSAf Act in 2001, ASSAf has steadily and resolutely pursued its mandate of providing evidence-based science advice in support of policy development on issues of national significance to government and beyond. While young by the standards of many academies elsewhere in the world, ASSAf has much to celebrate in this milestone year.

It is gratifying to witness the ever-increasing awareness and acknowledgement, across all sectors, of the role and responsibilities of the Academy. In recent years there has been a sharpening of the understanding of this role, and of the place of the Academy in relation to other bodies that provide science advice. Of course it is not unique in its advisory role, and it is therefore as well to identify synergies that exist between the Academy and other bodies in the country that form part of the National System of Innovation (NSI).

ASSAf is able to call on a substantial pool of experts, via its standing committees, its Members, and beyond, who are able to provide advice that is free of vested interests. In addition to initiating activities such as assessment studies and specialist workshops, it has received and responded to an increasing number of requests to carry out evidence-based studies that would inform policymakers. An example has been the work that ASSAf has carried out in analysing the inclusion and participation of women in academies of science globally. This work was supported by IAP – The Global Network of Science Academies and carried out in partnership with various organisations. ASSAf is actively involved also in promoting greater involvement of girls and women in science in South Africa, and towards this end hosts the South Africa National Chapter of OWSD, the Organisation for Women in Science in the Developing World.

Access to publications is central to scientific progress, and particularly in developing countries it is vital that access be open, and not hindered by financial and other constraints. In this respect the SciELO journal database, managed by ASSAf, plays a major role in enabling open access to South African publications. This has grown from strength to strength, and the total number of texts viewed on the site has doubled over the last year. Open Access Week was celebrated internationally during October 2015.

The stature of the Academy and also its relationships at the continental and international levels continue to grow. Within Africa collaboration takes place through NASAC, the Network of African Science Academies, as well as with individual national academies. A key development, in which ASSAf has played an important role, has been the establishment of Africa's Science Academy Development Agenda (ASADA), an initiative that involves all NASAC members. Its key role will be that of promoting the development of academies, as well as their capacity to provide advice.





The Academy is, in addition, an active member of the InterAcademy Partnership, a body with a membership of some 130 national academies. A great deal of effort at ASSAf during the last year was directed towards planning for the triennial IAP Conference and General Assembly, which took place over four days starting in late February. With Science Advice as the theme, this was the largest ever gathering of IAP academy members.

It is important to mention also the highly successful inaugural science advice workshop for African scientists, which took place just before the IAP meeting. This workshop, organised jointly by ASSAf, the International Network for Governmental Science Advice (INGSA), and the Department of Science and Technology (DST), was heavily oversubscribed and attracted participants from 16 African countries.

The activities of the Academy in Africa have been given a further boost with the agreement during 2015 that ASSAf hosts the Regional Office for sub-Saharan Africa of The World Academy of Sciences (TWAS-ROSSA) and the Regional Office for Africa of the International Council for Science (ICSU ROA). These hosting arrangements bring with them significant opportunities for maximising synergies in relation to the scientific enterprise in Africa.

This overview provides a glimpse of the myriad activities undertaken by ASSAf during the last year. The report which follows conveys the full scope and depth of the Academy's work, and will, I hope, emphasise the importance of this work in our national development and in our interactions at international level.

It is a pleasure to acknowledge the dedication and efforts of Prof Roseanne Diab, Executive Officer of the Academy, and her staff in the secretariat, who have striven to ensure the smooth and efficient working of the Academy.

It also a pleasure to acknowledge the support of Council members who through their guidance and willing support have most ably promoted the cause of the Academy. Finally, I thank the Minister and officials of the Department of Science and Technology for their advice, and for their enthusiastic support and promotion of its activities.

*Daya Reddy*

**Prof Daya Reddy**

**President: Academy of Science of South Africa**



## Molaetsa Wa Moporesidente Pegelo Ya ASSAf Ya Ngwaga Le Ngwana 2015 – 2016

Karolo ya bofelo ya paka e ya go neela ya pegelo e bona Akademi ya Saense ya Aforikaborwa (Academy of Science of South Africa) e amogela ngwaga wa bomasomepedi e ntse e le teng. Se ke bogolosegolo fa e sa le e nna lekgotla la semolao fa go ne go fetisiwa Molao wa ASSAf (ASSAfACT) ka 2001. ASSAf e ne ka iketlo le ka maikaelelo ya sala morago taolelo ya yona ya go neelana ka dikgakololo tse di nang le bopaki jwa bobatlisisi mo go tsa saense, ba tshegetsa tsweletso ya dipholisi mo mabakeng a a botlhokwa go puso le go e pota ka kwa. Le fa e santse e le ntšhwa ka maemo go diakademi tse dintsi go lo gongwe mo lefatsheng, ASSAf e na le tse dintsi tse e ka di ketekang mo ngwageng o wa ditiragalo tsa botlhokwa.

Go a itumedisa go iponela temogo e e oketsegang ka nako tsofthe le go e amogela go ralala maphata otlhe re lebile seabe le maikarabelo a Akademi. Mo dingwageng tse di sa tswang go feta go nnile le go tlhokotsa go tlhaloganya seabe se, le maemo a Akademi le makgotla a mangwe a a neelanang ka kgakololo ya merero ya saense. Le ga le, re a itse gore ga e tshwane e le nosi ka seabe sa yona sa bogakolodi, mme ka jalo e tshwanelwa ke go kaya gape le tirisanommogo e e leng teng magareng ga Akademi le makgotla a mangwe mo nageng a e leng karolo ya tsamaiso ya bosesetšhaba ya boitshimololedi.

ASSAf e kgona go bitsa Ditokololo tsa bona go tswa mo mekgatlhong ya bona e mentsi ya barutegi go feta ka dikomifi tsa bona tsa tsamaiso le go pota ka kwa e le ba ba kgonang go neelana ka dikgakololo tse di senang boitlamo bope jwa dikgatlhegelo tsa bona. Go tlaleletsa mo tirong ya bona ya go itshimololela ditiro tse di jaaka dithuto tsa tlhatlhobo le dithutano tsa baitseanape, akademi e amogetse le go tsibogela koketsego ya dikopo tse dintsi tsa go dira dithuto tse di itshetlegileng ka bopaki jwa bobatlisisi tse di tlaa thusang badiradipholosi. Sekao e nnile tiro e ASSAf e e dirileng ya go sekaseka go akaretsa le botsayakarolo jwa basadi mo diakademing tsa saense lefatshe ka bophara. Tiro e, e ne e tshegediwa ke IAP- Kgokagano ya Makalana a Lefatshe ka Bophara a Diakademi tsa Saense (IAP – The Global Network of Science Academies) mme ya dirwa ka go golagana le mekgatlho e e farologaneng. ASSAf e dira ka matlhagatlhaga gape mo go rotloetseng botsayakarolo jo bogolo jwa basetsana le basadi mo go tsa saense mo Aforikaborwa mme fa go ya kwa bofelong jwa se, e nne baamogelabaeng ba Kgaolo ya Bosetšhaba ya Aforikaborwa (South Africa National Chapter) ya OWSD, e bong Mekgatlho wa Basadi mo Mererong ya Saense mo Dinageng tse di Santseng di gola.

Phitlhelelo ya diphasalatso ke selo se segolo mo kgatelopeleng ya bosaense, segolo mo dinageng tse di santseng di gola go botlhokwa gore phitlhelelo e, e nne e e bulegetseng botlhe mme e se ke ya kgoreletswa ke mathata jaaka go tlhalelwa ke tšhelete kgotsa dilo tse dingwe fela. Go ya ka jenale ya tshedimosetso ya SciELO, e e tsamaisiwa ke ASSAf, e na le seabe se segolo mo go kgontsheng phitlhelelo e e bulegetseng diphasalatso tsa Aforikaborwa. Ntlha e, e godile ka maatla mme palogotlhe ya dikgang tse di bonwang mo inthaneteng e godile gabedi mo ngwageng o o fetileng. Beke ya Phitlhelelo e e Bulegetseng Botlhe e ne e ketekwa mo legatong la boditšhabatšhaba ka Diphlane 2015.

Maemo a Akademi le dikgolagano tsa yona mo legatong la kontinente le la boditšhabatšhaba a tswelela go gola. Mo Aforika dikgolagano di diragala ka ba NASAC, Kgokagano ya Makalana a Lefatshe ka Bophara a Diakademi tsa Saense gammogo le ba diakademi tsa ka nosi tsa bosetšhaba. Tsweletsopele e kgolo, e mo go yona ASSAf e nnileng le seabe se se botlhokwa, e ne e le go tlhoma Lena-neo la Tsweletso ya Akademi ya Saense ya Aforika (Africa's Science Academy Development Agenda - ASADA), e bong boitshimololeli jo bo akaretsang ditokololo tsothe tsa NASAC. Seabesegolo sa yona e tlaa nna sa go rotloetsa go tlhama diakademi gammogo le go nna le bokgoni jwa tsona jwa go neelana ka dikgakololo.

Akademi, fa re tlaleletsa, ke tokololo ya Kgokagano ya Diakademi, e leng lekgotla le le nang le botokololo jwa diakademi di le 130 tsa bosetšhaba. Tiro e

kgolo kwa ASSAf mo ngwageng o o fetileng e ne e lebisitswe mo go rulaganyetseng Khonferense ya Ngwagatharo ya IAP le Kokoano ya Kakaretso e e tshwerweng mo malatsing a le mane (4) e simolotse fa Tlhakole a ela go khutla. Thitokgang e ne e le Dikgakololo ka tsa Saense (Science Advice) mme e ne e le kopano e kgolokgolo e e kileng ya nna teng ya ditokololo tsa akademi ya IAP.

Go botlhokwa gape go bolela ka katlego e kgolo ya dithutano tsa go simolola go itsise dikgakololo tsa saense go baitseanape ba saense ba Seaforika tse di neng di tshwerwe fela fa pele ga kopano ya IAP. Dithutano tse, tse di neng di rulagantswe ke ASSAf le Kgokagano ya Boditšhabatšhaba ya Dikgakololo tsa Dipuso tsa Saense (INGSA), le Lefapha la Saense le Thekenoloji (DST) e ne e na le batsenela-dithutano ba ba fetileng palo mme e ngoketse batsayakarolo go tswa kwa dinageng di le 16 tsa Seaforika.

Ditiro tsa Akademi mo Aforika di neetswe tshegetso ka tumelano ya 2015 ya gore ASSAf e nne baamogelabaeng ba Ofisi ya Kgaolo ya sub-Saharan Africa ya Diakademi tsa Disaense tsa Lefatshe (TWAS-ROSSA) le Ofisi ya Kgaolo ya Aforika ya Khansele ya Boditšhabatšhaba ya Saense (ICSU ROA). Dithulaganyo tse tsa botsholabaeng di ba tlisetsa ditšhono tsa botlhokwa tsa go godisa tshwaragano go ya ka tiro ya bosaense mo Aforika.

Tshekatsheko e neelana ka ponalo ya ka bonako ya ditiro tsa palo e kgolo e e totobetseng tse di dirilweng ke ASSAf mo ngwaneng o o fetileng. Pegelo e e latelang, e neela mothamo o o tletseng le boteng jwa tiro ya Akademi le maikaelelo a yona. Ke solofela gore e gatelela botlhokwa jwa tiro e mo tsweletsopele ya rona ya bosetšhaba le tirisano ya rona mo legatong la boditšhabatšhaba.

Ke ka boitumelo gore ke amogele boineelo le matsapa a ga Moporofesara Roseanne Diab, Mokhuduthamaga wa Akademi le badiri ba gagwe mo lephateng la bokwaledi ba ba dirileng ka thata go netefatsa fa Akademi e dira sentle ka thelelo le ka nonofo.

Ke ka boitumelo gape go amogela tshegetso ya ditokololo tsa Khansele ba ka ntlha ya go nkaela ga bona le tshegetso e e boineelo ba tsweleditseng segolo morero wa Akademi. Kwa bokhutlong, ke leboga Tona le baofisiri ba Lefapha la Saense le Thekenoloji ka dikgakololo tsa bona le ka tshegetso ya bona e e matlhagatlhaga gammogo le go tsweledisa ditiro tsa Akademi.

*Dayah eddy*

**USolwazi Daya Reddy**

**UMengameli: we-Academy of Science of South Africa**

# Message Executive Officer

**The year 2015/16 was a momentous year in many ways for the Academy. It ushered in the 20<sup>th</sup> anniversary year of ASSAf, which was celebrated by the hosting of the prestigious InterAcademy Partnership (IAP) Conference and General Assembly at the end of February 2016 and which will be ended by the hosting of the Annual Meeting of African Science Academies (AMASA) in November 2016.**

Although extremely young when compared with other national science academies around the world that are hundreds of years old, ASSAf is considered to be a well-established academy that has made its mark in the global community of science academies. ASSAf's international reputation continues to grow as is evidenced by its numerous successful partnerships with international science academies and networks, such as Leopoldina, The World Academy of Sciences (TWAS), the Network of African Science Academies (NASAC) and the Inter-American Network of Academies of Science (IANAS), as well as international organisations such as the Organisation for Women in Science in the Developing World (OWSD) and Gender in Science, Innovation, Technology and Engineering (GenderInSITE).

ASSAf's national footprint is growing, although it is acknowledged that there is still much work to be done to improve the profile of ASSAf within our own country and within the science system.

Lest it be forgotten, 2015/16 will also be remembered as the year of the 'tough audit'. ASSAf is not a listed public entity but uncertainty over its status did not exempt ASSAf from the full weight of an audit under the Public Finance Management Act. As a small organisation, particular challenges were experienced around supply chain management. ASSAf has always operated as an efficient and lean organisation with minimal support staff and hence the audit was extremely demanding on senior staff, particularly the finance staff. It seems that there will be no turning back from this process and it will become the norm for the future.

A related issue is that of funding. ASSAf receives a very modest Parliamentary grant and although it has been fairly successful in raising external funding for projects, core operating costs have soared due to increasing compliance and reporting requirements. These matters have posed serious challenges for ASSAf and made it difficult to balance the budget.

Notwithstanding these challenges, ASSAf has kept its programmatic activities alive and has accomplished many significant achievements, some of which are highlighted here.

The *South African Journal of Science's* (SAJS), South Africa's foremost multi-disciplinary journal, goes from strength to strength. The shift to e-publishing has opened up a whole range of options with regard to monitoring and evaluating the impact of the journal. The introduction of article-level metrics allows us to identify the most visited articles, and to gather statistics on the location that is accessing such information. SAJS highlights is distributed to over 12 000 recipients and is effective in steering traffic to the website. The SAJS has an active social media presence, with a rapidly growing following. Certainly, the SAJS is one of the South African journals most active in e-publishing and though the National Scholarly Editors' Forum is providing leadership to the publishing community in South Africa.

The Scholarly Publishing Programme within ASSAf is also providing considerable support to the research and scholarly publishing community at a national level. They are driving the investigation into a national site licence for core commercial data bases to ensure equitable access to key journals in the future, developing a transparent and accountable process for evaluating books and conference proceedings, providing information sessions and leading the way in open access.

The science magazine, *Quest*, has embarked on a strategy to improve the utilisation of *Quest* in the schools. We are still in the early stages of implementation but aim to move beyond production and dissemination



of a glossy, high-quality product to ensuring that the magazine is impactful. Early investigations show that the point of intervention must be at educator level as teachers have indicated that they require help on how to utilise the magazine in the classroom.

During the reporting year, ASSAf produced three consensus study reports and three conference/workshop proceedings reports. This is record number for the Academy. Media uptake increased considerably and resulted in two articles in *Nature*. Much greater emphasis has been placed on dissemination, including presentations to key stakeholders. However, a question that is often asked of ASSAf by the Minister and the Department of Science and Technology, is the extent to which such reports are disseminated and utilised. There is not a general understanding of ASSAf's engagement with stakeholders post-publication and clearly this is a shortcoming of how we communicate the impact. Going forward, it is intended to pay greater attention to communicating the impact and uptake of reports.

Gender and science, technology and innovation activities have been taken to a new level over the past year. This is as a result of ASSAf being the GenderInSITE southern African focal point and associated funding, as well as a dedicated team within ASSAf and leadership from the Organisation for Women in Science for the Developing World (OWSD) executive committee in ASSAf. The model of having an OWSD National Chapter hosted by an Academy is an arrangement that has proven very successful as it builds on established linkages and is one that OWSD international is trying to spread to other countries. ASSAf and OWSD SA have built a substantial reputation for applying the 'gender lens' to all activities as a result of the GenderInSITE initiative.

Young scientists continue to be a strong focus of ASSAf. The South African Young Academy of Science (SAYAS) is provided with secretariat support and ASSAf incorporates them in activities where appropriate and nominates young scientists for awards and networking opportunities. The funding allocated to SAYAS by ASSAf for their various activities is very small as a result of ASSAf's own funding limitations. It is generally acknowledged that greater investment in SAYAS is needed but the challenge is how to secure more sustainable funding for them.

In this past year, ASSAf became host to the International Council for Science Regional Office for Africa (ICSU ROA). Coupled with its hosting responsibility for The World Academy of Sciences Regional Office for sub-Saharan Africa (TWAS-ROSSA), this gives ASSAf an opportunity to align these responsibilities with its own desire to foster African collaboration and play a greater role in African science.

The greatest challenge for ASSAf as alluded to earlier is funding. It is widely acknowledged by most in the science system that ASSAf is grossly underfunded given its outputs and wide range of activities in fulfilment of its mandate. The difficulty is how to move ASSAf from its small historical funding base and incremental increases each year to a more realistic and equitable funding base. There is insufficient new money coming into the science system and there are many competing demands. But ASSAf has shown that it offers a good return on investment and given its potential to leverage considerable contribution from its Membership on a voluntary basis the case for increased investment in ASSAf is strong.

As ASSAf comes of age it remains for me to thank the ASSAf Council and in particular the President, Prof Daya Reddy, for their support over the past year and of course my sincere thanks goes to the hard-working ASSAf secretariat, without whom ASSAf would not have been able to flourish.



**Prof Roseanne Diab**  
**Executive Officer:**  
**Academy of Science of South Africa**





# 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, 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.

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 (*Act 67 of 2001*), as amended by the Science and Technology Laws Amendment Acts (*Act 16 of 2011* and *Act 7 of 2014*), and a set of established regulations that collectively comprises the Academy's Constitution.

### **The Academy of Science of South Africa Act (*Act 67 of 2001*)**

This Act establishes 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.

### **Science and Technology Laws Amendment Acts (*Act 16 of 2011* and *Act 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) (*Act 1 of 1999*);
- National priorities outlined in the Medium-term Strategic Framework (MSTF);
- 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 (2012).

## 5 Organisational Structure

As a Membership-based organisation, the key intellectual resources of the Academy reside in its Membership, which currently comprises 470 Members as at the end of March 2016. Thirty-one new Members were elected in 2015. Three Members of the Academy passed away during the year. They were Professors Darragh O'Donoghue, Harm Moraal and Bob Seretlo.

The secretariat, with 33 staff members, is headed by an Executive Officer, Prof Roseanne Diab. During the reporting year, there were three resignations and four new staff appointed to fill vacant positions. A Supply Chain Management (SCM) Administrator position was created and filled by an internal appointee. The resultant gap in the receptionist and general administrative functions has been filled by a temporary appointee until a more permanent solution is found. Part-time staff includes the Editors of the Academy's periodical publications. Four interns were appointed in April 2015 and one in August 2015.

An organisational design exercise was commissioned by the ASSAf Council in 2015. It resulted in a realignment of the different programmes within the Academy secretariat. Although many of the changes have already been implemented, this report is aligned with the programmatic structure of the 2015/16 Annual Performance Plan.

The activities of the Academy are structured into six programmes as follows: Governance and Administration Programme; Communications Programme; Liaison Programme; Policy Advisory Programme; Publications Programme; and Scholarly Publishing Programme.

ASSAf is currently accommodated in rented premises in Perseus Park, Pretoria. The lease has been renewed until June 2017. The purchase 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 thirteenth member appointed by the Minister of Science and Technology as a representative of the National Advisory Council on Innovation (NACI).

Following the passing of Prof Patricia Berjak in 2015, Council elected Prof Brenda Wingfield as Vice-President of ASSAf for the remainder of the term of office of the current Council which will end in October 2016. Prof Norman Duncan from the University of Pretoria (UP) was elected as a Council member in 2015.

### 6.1 Council Composition



**President and Chairperson of ASSAf Council**

**Prof Dayanand (Daya) Reddy** holds the South African Research Chair in Computational Mechanics in the Department of Mathematics and Applied Mathematics at the University of Cape Town (UCT). He is also Director of the Centre for Research in Computational and Applied Mechanics, and served as Dean of the Faculty of Science at UCT over the period 1999 – 2005. He is a recipient of the National Order of Mapungubwe (Bronze), and a Fellow of The World Academy of Sciences (TWAS) and the African Academy of Sciences (AAS).

**Vice-President**

**Prof Iqbal Parker** is the Director of the International Centre for Genetic Engineering and Biotechnology, UCT. He was the Head of the Division of Medical Biochemistry and Director of Research in the Health Science Faculty at UCT. He is a founder Member of ASSAf and served as General Secretary from 2000 – 2004. He is a Fellow of TWAS.

**Vice-President**

**Prof Brenda Wingfield** is Deputy Dean in the Faculty of Natural and Agricultural Sciences and Professor of Genetics at UP. She also served as the Chair of the National Science and Technology Forum (NSTF) until recently.

**General Secretary**

**Prof Himla Soodyall** is the Director of the Medical Research Council (MRC)/NHLS/Wits Human Genomic Diversity and Disease Research Unit at the National Health Laboratory Service (NHLS) and the University of Witwatersrand (Wits). She is a recipient of the National Order of Mapungubwe (Bronze).



#### Treasurer

**Prof Sunil Maharaj** holds the South African Research Chair in Gravitating Systems and is Director of the Astrophysics and Cosmology Research Unit at the University of KwaZulu-Natal (UKZN).

#### Council Member

**Dr Robert M Adam** is the Director of the Square Kilometre Array (SKA) South Africa Project. He was a Group Executive at the Aveng Group and Chief Executive Officer of the South African Nuclear Energy Corporation (Necsa). Previously, he was the Director-General of the Department of Science and Technology (DST).

#### Council Member

**Prof Ahmed Bawa** was Vice-Chancellor and Principal of the Durban University of Technology (DUT). Previously he was Professor and Distinguished Lecturer at Hunter College, City University of New York and Deputy Vice-Chancellor (DVC) for Research at UKZN. He will take up the position of Chief Executive Officer of Universities South Africa in the next year.

#### Council Member

**Prof Stephanie Burton** is Vice-Principal: Research and Postgraduate Education at UP. She has served as Chairperson of the NSTF Science, Engineering and Technological Societies and Allied Professions Group (NSTF-ProSET), and Vice-President of the Federation of African Societies of Biochemistry and Molecular Biology.



#### Council Member

**Prof Hoosen Coovadia** is Emeritus Professor of Paediatrics and Child Health, UKZN. Director: Maternal Adolescent and Child Health, Wits and a former Commissioner at the National Planning Commission in the Presidency. He has been the recipient of some of the highest awards for work in health and human rights from both national and international organisations.



#### Council Member

**Prof Norman Duncan** is Professor of Psychology and the Vice-Principal: Academic at UP.



#### Council Member

**Prof Johann Mouton** is Professor in, and Director of the Centre for Research on Evaluation, Science and Technology (CREST) and the DST/NRF Centre of Excellence for Scientometrics and Science, Technology and Innovation Policy (SciSTIP).



#### Council Member

**Prof Zeblon Vilakazi** is the DVC Research and Postgraduate Affairs at Wits. He is a Fellow of the AAS and was nominated as a World Economic Forum (WEF) young global leader in 2010.





#### **NACI Representative**

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

#### **Council Advisor**

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

#### **Council Advisor**

**Prof John Mubangizi** is a Professor of Law at UKZN. He is also DVC and Head of the College of Law and Management Studies at the university.

#### **Council Advisor**

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



## 6.2 Council Meeting Attendance

The ASSAf Council met four times during 2015/16. Office-bearers' attendance of the Council meetings averaged 90%, while the average attendance rate of non-office-bearers, including the advisors to Council), was 61%.

An additional strategic planning Council meeting was held in February 2016.

Council Member	Attendance (out of 4)
Dr Rob Adam	1
Prof Ahmed Bawa	3
Prof Stephanie Burton	3
Prof Hoosen Coovadia	3
Prof Norman Duncan	2
* Prof Wieland Gevers	1
Prof Sunil Maharaj	3
Dr Shadrack Moephuli	2
Prof Johann Mouton	3
* Prof John Mubangizi	4
Prof Iqbal Parker	4
* Prof Nyameko Barney Pityana	2
Prof Daya Reddy	4
Prof Himla Soodyall	4
Prof Zeblon Vilakazi	3
Prof Brenda Wingfield	3

\*Advisors

# Part B

## Performance Information

### 1 Overview

#### 1.1 Service Delivery Environment

The Academy of Science of South Africa (ASSAf) is the official national science academy of South Africa, established by an Act of Parliament, *Act 67 of 2001* as amended and represents South Africa in the international community of science academies. ASSAf is part of a network of over 100 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 National Development Plan (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. ASSAf 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 the International Council for Science Regional Office for Africa (ICSU ROA) with effect from May 2015, and the hosting 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 continues to provide secretariat support and funding to the South African Young Academy of Science (SAYAS) and continues to support their activities. Office space and support services are provided also 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 as contained in the NDP and Government's Medium-term Framework for 2014 to 2019.

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 are 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"> <li>- GMOs in African Agriculture: Challenges &amp; Opportunities</li> <li>- Regulation of Agricultural GM Technology</li> <li>- Clinical Research &amp; Related Training in SA</li> <li>- Improved Nutritional Assessment</li> <li>- State of Biosafety &amp; Biosecurity in SA</li> <li>- New Technologies and Policy Implications for SA</li> <li>- Legal, Ethical and Social Considerations of Human Genetics and Genomics</li> </ul>	<ul style="list-style-type: none"> <li>- Improvement of rural development and food security</li> <li>- Improvement of health profile of society</li> <li>- Strengthening of the skills and resource base of SA</li> </ul>
Space Science and Technology	-	-
Energy	<ul style="list-style-type: none"> <li>- Improving Access to Energy in sub-Saharan Africa</li> <li>- Nuclear Energy Safety</li> <li>- State of Energy Research in SA</li> <li>- Technical Readiness of SA for Hydraulic Fracturing</li> <li>- State of Green Technologies in SA</li> </ul>	<ul style="list-style-type: none"> <li>- Improvement of rural development and food security</li> <li>- Improvement of environmental assets and natural resources</li> </ul>
Global Change	<ul style="list-style-type: none"> <li>- Low Carbon Cities</li> <li>- Science, Water and Sanitation</li> <li>- State of Green Technologies in SA</li> <li>- Technological Innovations for a Low Carbon Society</li> <li>- Environment and Health</li> </ul>	<ul style="list-style-type: none"> <li>- Improvement of environmental assets and natural resources</li> </ul>
Human and Social Dynamics	<ul style="list-style-type: none"> <li>- PhD Study</li> <li>- State of Humanities in SA</li> <li>- STEM Education</li> <li>- Scholarly Publishing Programme</li> </ul>	<ul style="list-style-type: none"> <li>- Strengthening of the skills and resource base of SA</li> </ul>

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	In 2015, the Standing Committee on Science for the Reduction of Poverty and Inequality was reconstituted and renamed to align more closely with the NDP triple challenges of poverty, inequality and unemployment	<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>	Employment of DST/NRF interns and ensuring that they are equipped with marketable skills
Indirect	Hosting the Annual Meeting of African Science Academies (AMASA) in November 2016, with the theme Poverty Reduction	The values of ASSAf, which was formed explicitly after the democratic elections in 1994, fully embrace the principles of the Constitution of SA	Raising of science awareness and providing information on science careers through the publication of Quest science magazine

### 1.3 Significant Developments/Major Projects

The Academy of Science of South Africa celebrates its 20<sup>th</sup> anniversary in 2016.

ASSAf currently has a Membership of 470 – 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.

SciELO SA, the first fully open access platform for scholarly publishing in South Africa and on the continent, has 62 South African journal titles. The collection is included in the Web of Science portal, significantly increasing the visibility of South African scholarly journals.

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.

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 InterAcademy Partnership. ASSAf is also host to two regional offices of key international partners, namely ICSU and TWAS.

In February 2016, ASSAf hosted a successful IAP Conference on Science Advice which was attended by more than 200 international scholars representing over 100 countries. ASSAf will also host the 12<sup>th</sup> Annual Meeting of African Science Academies (AMASA) in November 2016, as part of its 20<sup>th</sup> anniversary celebrations.

### 1.4 Service Delivery Improvement Plan

#### ASSAf Institutional Review

The ASSAf five-year institutional review commenced in February 2016. Some 30 participants were interviewed by an independent review panel, comprising Dr Bruce Alberts, Prof Sabiha Essack, Dr Heide Hackmann (Co-Chair), Prof Mohamed Hassan, Prof Daniel Ncayiyana (Co-Chair) and Dr Dave Woods.

Those interviewed included heads of South African institutions that work closely with ASSAf, as well as representatives from other African and international science academies.

### 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 summary table below.

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

- Improvement of the health profile of society.
- Improvement of rural development and food security.
- Improvement of environmental assets and natural resources.



## 2 Performance Information by Programme

### 2.1 Programme 1: Governance and Administration Programme

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 and quarterly reports. A monitoring and evaluation (M&E) component is also part of this programme's responsibilities.

This programme is also responsible for recognition and promotion of excellence and awards.

Strategic objectives of this programme are:

- Promote good governance through Council.
- Promote diversification of Academy Membership.
- Recognise, reward and promote excellence in science.

#### 2.1.1 Good Governance

Good governance of the Academy is ensured through regular meetings of Council, the execution of Council elections, support of Council meetings and efficient and effective execution of Council resolutions.

The ASSAf Council comprises 13 members, of whom 12 are elected from the Membership and one is appointed by the Minister of Science and Technology as a representative of NACI. The Academy has five office-bearers: the President, two Vice-Presidents, General Secretary and Treasurer.

The appointment of advisors to the ASSAf Council is executed in terms of Regulation 8 of ASSAf's Constitution.

The Council has three standing committees: an Executive Committee comprising the office-bearers that allows for decision-making on important matters in the intervals between Council meetings; an Audit and Risk Committee, and a Human Resources Committee.

At least four Council meetings are held each year and Council elections are held every four years with effect from 2012 in accordance with the Science and Technology Laws Amendment Acts (Act 16 of 2011 and Act 7 of 2014).

Council members do not receive any remuneration for their involvement in governing the activities of the Academy. Funds are allocated to cover Council members' travel and logistical costs associated with Council and other Academy meetings.

In the financial year 2015/16, four Council meetings, as well as a Council Strategic Planning meeting were held; three Executive Committee meetings; four Audit and Risk Committee meetings; and four Human Resources Committee meetings.

The Annual General Meeting of the Academy was held on 14 October 2015 in Stellenbosch. It was attended by some 60 ASSAf Members, including new Members elected to the Academy in 2015.

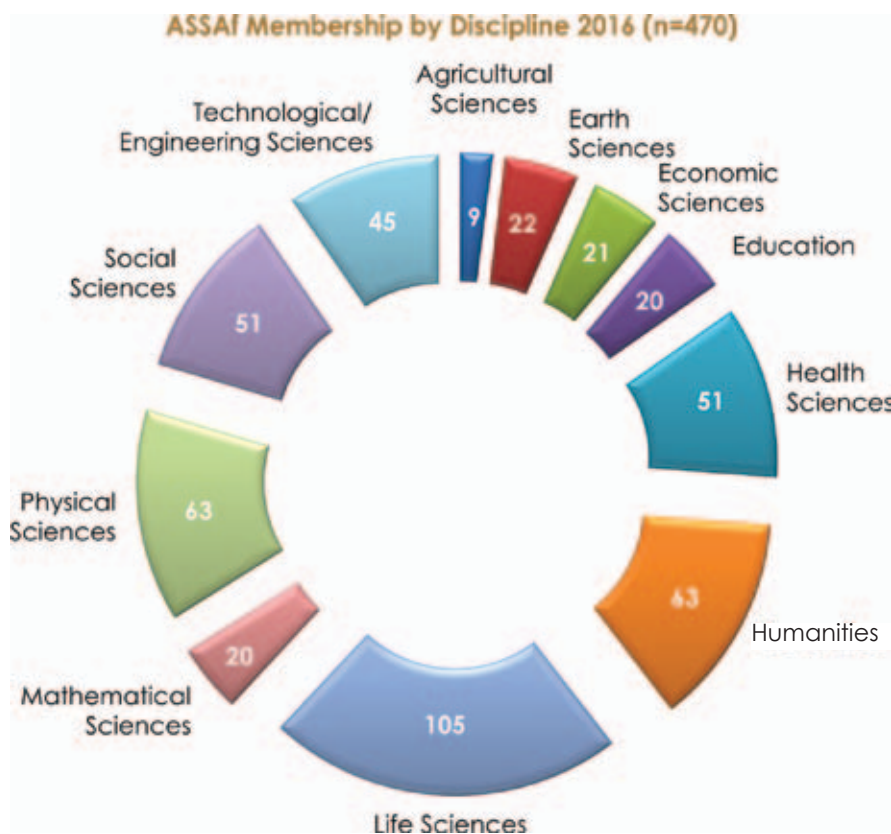
#### 2.1.2 Diversification of Academy Membership

The core function of any national science academy is to honour the country's most outstanding scholars by electing them to Membership of the Academy. ASSAf Members are drawn from the full discipline spec-

trum as shown in the figure below. Thirty-one new Members were elected during the reporting period. Of these, 35% were women and 32% black. This brings the respective proportions for the full Membership to 25% and 28%.

Although there was a concerted drive to increase nominations of black and women candidates, the outcome of the election process did not significantly change the demographic profile of the Academy Membership. Alternative options, including a possible change in the ASSAf Act, are under investigation to fulfil the Academy's transformation objectives.

See Annexure A for the full Membership list.



## Members Elected in 2015

Prof Peter Alexander	Professor of Sociology and NRF SARCHI Chair in Social Change, UJ
Prof Priscilla Baker	Professor in Analytical Electrochemistry in the Department of Chemistry, UWC
Prof Theresa Coetzer	Acting Dean of Research: College of Agriculture, Engineering and Science, UKZN
Prof Ernst Conradie	Senior Professor in the Department of Religion and Theology, UWC
Prof Deon de Beer	Chief Director: Technology Transfer & Innovation Support, NWU (Potchefstroom)
Prof Uma Dhupelia-Mesthrie	Senior Professor in the Department of History, UWC and Deputy Dean of Arts (Research and Postgraduate Studies)
Prof Jeanetta du Plessis	Director of the Centre of Excellence for Pharmaceutical Sciences and Professor of Pharmaceutics, NWU (Potchefstroom)
Prof Stephanus Ferreira	Director of the Centre for Space Research, NWU (Potchefstroom)
Prof Thomas (Tony) Ford	Former Professor of Theoretical Chemistry, UKZN
Prof Brian Harvey	Professor, Centre of Excellence for Pharmaceutical Sciences, NWU (Potchefstroom)
Dr Bavesh Kana	Senior Researcher and Head of the Wits Node of the Centre of Excellence for Biomedical TB Research
Prof Hester Kloppe	Chief Executive Officer: Forum for University Nursing Deans of South Africa
Prof Murray Leibbrandt	Professor in the School of Economics, UCT and Director of the Southern Africa Labour and Development Research Unit
Prof Bhiekie Mamba	Director of the Nanotechnology and Water Sustainability Research Unit, College of Science, Engineering and Technology, Unisa
Prof Julian May	Director, NRF/DST Centre of Excellence in Food Security, and Director and Professor, Institute for Social Development, UWC

Prof Graeme Meintjes	Associate Professor of Medicine, an Infectious Diseases Physician and a clinician scientist, UCT
Prof Keymanthri Moodley	Director of the Centre for Medical Ethics and Law, Department of Medicine, SU
Prof Stuart Piketh	Director: School of Geo and Spatial Science, NWU (Potchefstroom)
Prof Tahir Pillay	Chief Specialist, Professor and Head of the Department of Chemical Pathology, and Director of the Division of Clinical Pathology, UP
Prof Christian Pirk	Associate Professor, Department of Zoology and Entomology Social Insect Research Group, UP
Prof Gita Ramjee	Director and Chief Specialist Scientist of the HIV Prevention Research Unit, MRC
Prof Laetitia Rispel	Head of the School of Public Health, Wits
Prof Maria (Maxi) Schoeman	Professor and Head of the Department of Political Sciences, UP
Prof Tamara Shefer	Professor of Women's and Gender Studies and Deputy Dean of Teaching and Learning in the Faculty of Arts, UWC
Prof Precious Sibanda	Professor of Applied Mathematics, UKZN
Prof Robert Slotow	Deputy Vice-Chancellor and Head of College of Health Sciences, UKZN
Prof Daniela Cristina Stefan	Vice-President of the South African MRC
Prof Garth Stevens	Assistant Dean for Research in the Faculty of Humanities and Professor in the Department of Psychology, Wits
Prof Christopher Stroud	Senior Professor in the Department of Linguistics, UWC and Director of the Centre for Multilingualism and Diversities Research at the university
Prof André Strydom	Vice-Dean of Research and Postgraduate Studies and Scientific Director: Faculty Central Analytical Facility, UJ
Prof Stefan Weiss	Professor of Biochemistry at the School of Molecular and Cell Biology, Wits

## 2.1.3 Recognition of Excellence

### **Science-for-Society Gold Medals**

ASSAf Science-for-Society gold medals are the apex awards of the Academy and the South African science system and are awarded in recognition of outstanding achievements by individuals. Up to two gold medals are awarded per annum for outstanding achievement in scientific thinking for the benefit of society.

ASSAf awarded only one gold medal in 2015/16, as the other nominations did not adequately meet the requirement for demonstrating service to society.

ASSAf recognised Prof Anusuya Chinsamy-Turan at its prestigious Annual Awards Ceremony held in Stellenbosch on 14 October 2015. Chinsamy-Turan is a palaeobiologist and Head of the Department of Biological Sciences at UCT. She is a global expert on the microscopic structure of the bones of extinct and extant vertebrates. Her work has been recognised by several highly acclaimed awards.

### **African Union (AU)-TWAS Award**

Two young scientists were recognised for outstanding achievements. The AU-TWAS award scheme aims to recognise and reward talented young scientists in South Africa.

Professor Yahya Choonara received the award for Basic Sciences, Technology and Innovation. He is an Associate Professor of Pharmaceuticals in the Department of Pharmacy and Pharmacology at Wits and Senior Research Scientist at the Wits Advanced Drug Delivery Platform research unit.

Professor Marlien Pieters received the award for Earth and Life Sciences. She is the Head of the sub-programme: Nutrition and Haemostasis in the Centre of Excellence for Nutrition, NWU.

### **Sydney Brenner Fellowships**

ASSAf also awarded two top young South African scientists the prestigious Sydney Brenner Fellowship at its Annual Awards Ceremony.

The award was established when Dr Sydney Brenner donated a portion of his 2002 Nobel Prize to permit ASSAf, in partnership with the Oppenheimer Memorial Trust, to offer a postdoctoral Fellowship for research in molecular biology to be undertaken in South Africa over two years by outstanding young scientists.

The 2015 recipients of the Sydney Brenner Fellowship were Drs Dorit Hockman and Justin Nono Komguep.

Hockman received her undergraduate and MSc degrees from UCT and did a PhD at Cambridge University as part of the Wellcome Trust four-year PhD Programme in Developmental Biology.

Komguep is a Postdoctoral Research Fellow at UCT. He completed his BSc, BSc (Hons) and MSc in Biochemistry with distinction at the University of Yaoundé 1 working on the influence of hemoglobinopathies on antimalarial therapy.

### ***Distinguished Visiting Scholars***

ASSAf hosted one Distinguished Visiting Scholar in March 2016. Prof Catherine Campbell from the London School of Economics delivered four public lectures at UP, the University of Limpopo (UL) and UKZN. The topics of her lectures were:

- Understanding women's agency in highly coercive settings: gender, power and social change.
- Learning from HIV and AIDS – can community mobilisation tackle the health impacts of complex social problems?
- Against 'human rights': A blunt tool for community mobilisation in highly marginalised settings?
- Lessons from the HIV/AIDS epidemic: Women's agency, social change and human rights.

During her visit to UL, Campbell also presented a workshop to young scholars and academics at the Human Sciences Research Council's (HSRC) Annual Young Graduates and Scholars Conference that was held at the institution. The workshop was titled Getting your Research Published: Advice for Young Academics. She drew on her experience of publishing 180+ academic papers in 20 years in the fields of public health, social development and community psychology.

The second Distinguished Visiting Scholar, Prof Phillip Awadalla of Canada, had to cancel his visit at short notice due to unforeseen personal circumstances. His visit will be rescheduled during 2016/17.

### ***Regional Lectures***

ASSAf hosted three regional lectures and one panel discussion. In March 2016, a panel discussion was hosted in collaboration with the South African Young Academy of Science (SAYAS). The panel discussion on the topic Youth Perspectives on Science Advice to Government was held at UWC. Participants on the panel were Prof Sameh Soror, Egyptian Young Academy of Science (EYAS), Dr Tolullah Oni (SAYAS) and Dr Orakanoke Phanraksa of the Global Young Academy (GYA), Prof Iqbal Parker (ASSAf Vice-President) and Dr Natasha Ross (SAYAS). This was the first time that a panel discussion has been jointly hosted by ASSAf and SAYAS.

In June 2015, Dr Jane Lubchenco, Distinguished Professor at Oregon State University and the United States Science Envoy for the Ocean, delivered an ASSAf-hosted public lecture on the US Experience in Managing Ocean Resources, in Pretoria. Lubchenco's visit will lead to an Africa-wide initiative amongst African science academies to raise awareness on ocean science.

In September 2015, Prof Richard Catlow from the University College London delivered a lecture jointly hosted with the South African Royal Society on Molecules, Materials and Modelling at Wits.

In February 2016, Prof Christopher Mathew and Prof Michèle Ramsay, both from Wits, delivered a lecture at Wits on Exploiting Large Population Cohorts to Capture Genomic and Environmental Determinants of Chronic Diseases. This was arranged as a substitute for the DVS lecture that was cancelled.

Through its continued partnership with the Royal Society to offer public lectures, ASSAf further supported a series of regional lectures hosted at UCT during the reporting period.



**Table 1: Programme 1: Performance Indicators for the 2015/16 Financial Year**

Strategic objective	Planned target	Performance indicator	Actual performance 2014/15	Actual performance 2015/16	Deviation	Status	Comment
Promote good governance through Council	100%	Unqualified audit	100%	100%	-	Achieved	
	4	No. Council meetings	4	4	-	Achieved	The strategic planning session is not included as a meeting
	3	No. Executive Committee meetings	3	3	-	Achieved	
	4	No. Audit & Risk Committee meetings	4	4	-	Achieved	
	2	No. Human Resource Committee meetings	2	4	-	Exceeded target	Additional meetings due to consideration of the organisational design report
Promote diversification of Academy Membership	25%	Proportion of women Members	24%	25%	-	Achieved	
	28%	Proportion of black Members	27%	28%	-	Achieved	
Recognise, reward and promote excellence in science	2	No. Science-for-Society gold medals awarded	2	1	-1	Not achieved	Council decision to award only one medal based on lack of suitable applications
	2	No. Distinguished Visiting Scholars hosted	2	1	-1	Not achieved	Withdrawal of second DVS due to personal circumstances
	3	No. regions hosting public lectures	1	4	+1	Exceeded target	Lectures were held in Western Cape, Gauteng, Limpopo, KwaZulu-Natal

## 2.2 Programme 2: Communication Programme

The purpose of this 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.

The Communication Programme handles all matters related to information provision and dissemination, market-related communications and outreach initiatives on behalf of ASSAf.

ASSAf stakeholders include Members, representatives of government and other science councils, universities, sponsors and the public.

Strategic objectives of this programme are to:

- Market the Academy among target audiences.
- Promote public awareness of science.

### 2.2.1 Marketing

ASSAf utilises the advantages of electronic communication optimally and has a well-established internet presence ([www.assaf.org.za](http://www.assaf.org.za)) and dedicated websites for other activities, such as the website for the South

*African Journal of Science (SAJS)* ([www.sajs.co.za](http://www.sajs.co.za)), an ASSAf blog, in which reader interaction is encouraged by addressing topical subjects, and a website for online scientific writing ([www.assaf.org.za/osc/](http://www.assaf.org.za/osc/)). All websites are managed internally.

During the reporting year, the Academy increasingly has employed social media in the form of Twitter and Facebook to publicise its activities. On 1 April 2015, ASSAf had 53 impressions on Twitter per day which increased to 128 impressions per day by 31 March 2016. The Twitter account has 811 Followers, with an increase of two Followers per day. 57% of the Followers are male and 43% female.

The Academy is also profiled and branded in its publications, in the dissemination and promotion of its products, i.e. evidence-based study reports, among relevant stakeholders, through the release of press statements and promotion of Academy activities, among others, in its quarterly electronic newsletter.

Twenty-nine media statements were released during the financial year. Of these, the publication of the ASSAf consensus studies, *Diversity in Human Sexuality: Implications for Policy in Africa* in May 2015 and *Women for Science: Inclusion and Participation in Academies of Science* published in October 2015 generated widespread media coverage. Further statistics are given later in this report.

ASSAf produced and printed eight evidence-based study reports during the financial year. These were:

- *Diversity in Human Sexuality: Implications for Policy in Africa*
- *The State of Biosafety and Biosecurity in South Africa*
- *On Being Controversial: The Humanities Reach Out – Proceedings Report*
- *Report on Grouped Peer Review of Scholarly Journals in Humanities Part 1: 'Literature Group' (Classics, Literature & Languages)*
- *Environment and Health Symposium – Proceedings Report*
- *Women for Science: Inclusion and Participation in Academies of Science - A Survey of the Members of IAP: The Global Network of Science Academies Members*
- *Insights into South Africa's Participation in the 7<sup>th</sup> Framework Programme for Research and Technological Development of the European Commission*
- *Measuring Deprivation in order to Promote Human Development in South Africa – Proceedings Report*

The print and online media are monitored regularly to determine uptake and impact of Academy activities.

Four issues of the *Science for Society Newsletter*, ASSAf's electronic newsletter carrying news and activities of the Academy, were distributed to about 12 000 recipients. Each issue of the popular science magazine, *Quest*, features news on the Academy.

## 2.2.2 Public Awareness of Science

The Academy was marketed at various science events and showcased its activities at conferences, symposia and workshops. ASSAf took part in the first Science Forum South Africa held in December 2015, as well as in the DST exhibition during the Science and Technology (S&T) Budget Vote at Parliament on 21 May 2015. ASSAf highlighted and showcased the groundbreaking work it is doing in scholarly publishing in the country through its open access platform, SciELO SA, on this occasion.

An exhibition focusing on the ASSAf 20-Year celebrations was developed and showcased for the first time at the IAP Conference on Science Advice in February 2016. An exhibition dedicated to the IAP Conference was also developed.

The popular science magazine, *Quest – Science for South Africa* embarked on an intervention strategy to widen its reach and optimise its impact.

*Quest* participated in five festivals, five career guidance events, four conferences and ten science events. Eleven district offices in three provinces were visited. The following science festivals were the most important: SciFest in Grahamstown from 2 – 8 March 2016 with 56 425 visitors and for the first time the Eding Science Festival in Polokwane.

Further information on *Quest* is reported in Section 2.6

**Table 2: Programme 2: Performance Indicators for the 2015/16 Financial Year**

Strategic objective	Planned target	Performance indicator	Actual performance 2014/15	Actual performance 2015/16	Deviation	Status	Comment
Market the Academy among its target audiences	20	No. media releases	20	29	+9	Exceeded target	Increased ASSAf activities
	4	No. issues Science for Society newsletter	4	4	-	Achieved	
	1	Publication of Annual Report	1	-	-	Achieved	
	5	No. evidence-based study reports published	4	8	+3	Exceeded target	Increased ASSAf activities
Promotion of public awareness of science	7	No. exhibitions at science events	7	10	+3	Exceeded target	Increased Quest exhibitions and appointment of dedicated Education Liaison Officer for Quest

## 2.3 Programme 3: Liaison Programme

The purpose of this programme is to establish and give effect to strategic partnerships with other national science academies and academy networks, and to establish, strengthen and enhance interactions with key stakeholders in key national government departments, policymakers in government, and relevant national and international scientific networks and organisations.

A key objective of this programme during 2015/16 was to focus on academy development in the Southern African Development Community (SADC) region and to strengthen bilateral agreements with other academies. The programme is also responsible for capacity development activities that include young scientists and women in science.

ASSAf assumed hosting responsibilities for the International Council for Science (ICSU) Regional Office of Africa (ROA) in 2015/16 and continued serving as host of The World Academy of Sciences Regional Office for sub-Saharan Africa (TWAS-ROSSA), which was transferred to ASSAf in March 2015.

Strategic objectives of this programme are to:

- Initiate and develop relations with global, African and SADC science academy networks, national science academies and other science organisations.
- Promote participation for young scientists and women in science policy-related activities.

### 2.3.1 International and Regional Collaboration

#### International

##### G-Science Academies

The G-Science academies meeting was hosted by the Science Council of Japan in Tokyo from 16 to 19 February 2016.

After an absence of a few years, ASSAf was invited to the meeting in Japan and welcomed the return to the more inclusive G-Science academies format. Besides the G7 academies, representatives from academies in Brazil, India, Korea, South Africa, Turkey and the African Academy of Sciences were present. ASSAf was represented by ASSAf President, Prof Daya Reddy and Executive Officer, Prof Roseanne Diab.

Three draft statements were discussed and will be presented to the G7 meeting of S&T Ministers and then to the G7 Summit in May 2016. The three statements are on: Disaster Resilience; Global Brain Resources; and Nurturing Scientists for the Future.

## **InterAcademy Partnership (IAP)**

Academies of science and medicine traditionally have aligned themselves into three major global networks – the Global Network of Science Academies (IAP), the InterAcademy Council (IAC) and the InterAcademy Medical Panel (IAMP) – in order to build on and amplify their individual strengths when facing pressing global issues. These three inter-related organisations have now formed an umbrella organisation – the InterAcademy Partnership (IAP) – which was launched in March 2016 in Hermanus during the IAP General Assembly hosted by ASSAf.

This brings together established global networks of academies with the goal of maximising the contributions of science toward understanding and solving the world's most challenging problems. The three existing networks, the IAP, IAC and IAMP, will each retain their own governance structures and will be known as IAP-Policy, IAP-Research and IAP-Health, respectively.

Prof Daya Reddy serves on the Executive Committee of the IAP and is the IAC Co-Chair. Prof Jimmy Volmink, who has served on the IAMP Executive Committee, is stepping down in 2016 and has been replaced by Prof William Pick.

## **IAP General Assembly and Conference**

ASSAf hosted the IAP General Assembly and Conference in February/March 2016 in Hermanus. The conference was funded by the DST and the NRF, among others, and was attended by more than 200 delegates.

The conference theme was science advice which is aligned to global science policy agendas such as sustainable development goals, and S&T for development dialogues, giving an opportunity for the voice of African scientists and policymakers to be heard.

The conference brought scholars from South Africa and abroad together for discussions on science advice as an ecosystem, science advice in times of emergencies or disasters, and in the international arena. Country readiness for science advice and the interplay between science advice, politics and the media were also among the topics discussed.

The Minister of Science and Technology, Mrs Naledi Pandor, delivered the keynote address at the opening ceremony.

Eminent international speakers included Prof Sir Peter Gluckman, Chief Science Advisor to the Prime Minister of New Zealand, Prof Jacqueline McGlade, Chief Science Advisor to the United Nations, Mr David Mair of the European Commission and the Co-Chairs of the IAP, Prof Volker ter Meulen (Germany) and Prof Mohamed Hassan (Sudan).

Side events before and during the conference provided several opportunities for expert engagement. These included a workshop on science advice for African scientists that was attended by 60 delegates from African countries, and a workshop on off-grid energy for rural development.

ASSAf, which marks its 20<sup>th</sup> anniversary in 2016, launched a report on *Women for Science: Inclusion and Participation in Academies of Science* at the conference.

## **Bilateral with the Austrian Academy of Sciences**

ASSAf signed a memorandum of understanding (MoU) with the Austrian Academy of Sciences during the TWAS General Assembly and Scientific Conference held in Vienna in November 2015.

The MoU is the second, after Egypt, that the Austrian Academy has signed with an African country. It follows the science bilateral agreement between South Africa and Austria.

The MoU states that the two academies will initiate common collaborative projects and continue those already in progress. This cooperation will also include, but not be limited to, consensus studies, scholarly publications, workshops or conferences, and support for young scientists. Where feasible, the academies will support the development of capacity for other African science academies.

ASSAf has eight MoUs with other academies, both in Africa and abroad, including China, Germany, India, and Nigeria.



## TWAS

ASSAf continues to maintain a close relationship with TWAS, which is headquartered in Trieste. TWAS's 13<sup>th</sup> General Conference and 26<sup>th</sup> General Meeting were held in Vienna, Austria, from 18 to 21 November 2015.

ASSAf Executive Officer, Prof Roseanne Diab, is the Co-Chair of the Gender Advisory Panel of TWAS.

## Regional

### TWAS-ROSSA

ASSAf has hosted the TWAS Regional Office for sub-Saharan Africa (TWAS-ROSSA), one of five regional offices of TWAS, since March 2015. TWAS-ROSSA was launched formally on 18 June 2015 at a function attended by DST Deputy Director-General, Mr Daan du Toit, and representatives from the NRF, universities and embassies. The TWAS Executive Director, Prof Romain Murenzi, gave the keynote address.

ASSAf provides secretariat support to the regional office, and coordinates efforts to promote the activities of TWAS and its affiliated organisations in sub-Saharan Africa. ASSAf aims to:

- Enhance the visibility of TWAS among young and promising scientists, policymakers and media through, for example, the organisation of public lectures, discussion meetings with local newspapers/magazines and other fora.
- Identify eminent scientists in the region and nominate them for TWAS membership and awards.
- Assess the vitality and effectiveness of TWAS' activities in the region.
- Organise activities in areas of S&T that are of critical importance to the region.

TWAS-ROSSA elected two young scientists, Mr Njau Daniel Gachuri, a forensic biochemist from Kenya, and Ms Nikiema Zara Soutonnoma, a plant geneticist from Burkina Faso, to attend the Biovision Forum that was held in Lyon, France from 15 – 16 April 2015. Biovision is a World Life Sciences Forum that engages renowned scientists, policymakers and industry and civil society leaders in debates on global issues involving the latest advances in Life Sciences and their impact on society.

In October 2015, TWAS-ROSSA announced Prof Alta Schutte from NWU as winner of the prestigious Regional Young Scientist award.

The award recognises an outstanding young scientist from sub-Saharan Africa who has contributed to the development, mentoring and training of postgraduate students in various disciplines in addressing the challenges Africa is facing.

Schutte is Professor of Physiology and holds a DST/NRF Research Chair in the Early Detection and Prevention of Cardiovascular Disease in South Africa, which is hosted by the Hypertension in Africa Research Team at NWU. She is also the Unit Director of the Medical Research Council's Extramural Unit for Hypertension and Cardiovascular Disease.

In November 2015, TWAS announced Prof Jan Smit from NWU as the winner of the TWAS Regional Prize during the TWAS 26<sup>th</sup> General Meeting which was held in Vienna, Austria. The Regional Prize was aimed at honouring an outstanding scientist who has contributed to the development of scientific educational material.

Smit is a Physics Professor and Manager of the Science Centre at NWU. He is the main driving force behind the establishment of numerous science centres around the country and in Lesotho.

Both the Regional Prize and the Regional Young Scientist Prize were officially awarded during the Inaugural Science Forum South Africa in the presence of the Minister of Science and Technology, Mrs Naledi Pandor and Prof Romain Murenzi, Executive Director of TWAS.

The nomination of five TWAS Young Affiliates from sub-Saharan Africa was also announced. The Affiliate-ship is a great honour and is for a period of five years, during which the Young Affiliates are invited to participate in the TWAS general meetings and conferences, as well as to provide feedback to TWAS on how the Academy can respond to the needs of young scientists in developing countries. The TWAS Young Affiliates for 2015 are Dr Frederick Adzitey from Ghana, Dr Banothile Makhubela from South Africa, Dr Alice Matimba from Zimbabwe, Prof Anél Petzer from South Africa and Dr David Poumo Tchouassi from Cameroon.

The hosting of TWAS-ROSSA is an opportunity to strengthen links across Africa and build the profile of TWAS on the continent.

## **International Council for Science Regional Office for Africa (ICSU ROA)**

The International Council for Science (ICSU) is an international non-profit organisation headquartered in Paris, France. ICSU ROA, launched in September 2005, is one of three regional offices, and is mandated to ensure that the voice of African scientists influences the international agenda and that scientists from the continent are fully involved in international research guided by regional priorities.

ASSAf has hosted ICSU ROA since May 2015 and will host it for the next five years. It provides an opportunity to synergise and strengthen activities of both organisations in Africa.

## **Science Academy Development in Africa**

A five-year strategic plan has been developed to guide academy development in Africa in the future. This followed a workshop hosted by the DST and ASSAf in February 2015 where 24 academies and other stakeholders were represented.

The plan succeeds the major 11-year African Science Academy Development Initiative (ASADI) led by the US National Academies that successfully and formally ended in 2015. The new plan is named Africa's Science Academy Development Agenda (ASADA) in recognition of this second phase of academy development, which is distinguished from its predecessor in that it is conceptualised by the African academies of science.

The strategic goals of the plan are to strengthen science academies in Africa and increase collaboration. Currently, there is a process underway to align ASADA with NASAC's strategic plan.

## **The Network of African Science Academies (NASAC)**

ASSAf is represented on the Board of NASAC as General Secretary, with Prof Barney Pitso as the ASSAf representative.

With funding from Leopoldina, ASSAf is engaged in a collaborative project with NASAC, the Ghana Academy of Arts and Sciences and the Global Young Academy. The main aim of the project is to strengthen communication in each of the science academies by holding communication events to disseminate policymakers' booklets produced in the previous year.

## **Science Advice Workshop for African Scientists**

The International Network for Governmental Science Advice (INGSA), ASSAf and the DST hosted a Science Advice Workshop for African Scientists on 26 and 27 February 2016. The workshop preceded the IAP Conference on Science Advice hosted by ASSAf. The workshop was made possible through funds from The Wellcome Trust, the New Zealand Ministry of Foreign Affairs and Trade and DST.

The workshop titled Enhancing Capacities in Providing Science Advice to Governments marked the first human capital development workshop under the auspices of INGSA, which is chaired by Prof Sir Peter Gluckman, Chief Science Advisor to the Prime Minister of New Zealand. INGSA provides a forum for policymakers, practitioners, academies of science, and academics to share experiences, build capacity and develop theoretical and practical approaches to the use of scientific evidence in informing policy at all levels of government.

Approximately 60 delegates from 16 African countries participated. Eminent international speakers included Prof Sir Peter Gluckman, Dr Flavia Schlegel, Assistant Director-General, UNESCO; and Prof James Wilsdon, Co-Chair INGSA.

A key outcome of the workshop was the establishment of an INGSA Africa Chapter to provide a platform for ongoing collaboration among African scientists

## **Off-grid Energy for Rural Development Workshop**

ASSAf hosted a workshop on Off-grid Energy for Rural Development in conjunction with the Smart Villages initiative on 28 February 2016. The workshop preceded the IAP Conference on Science Advice in Hermanus and provided an opportunity to optimise attendance.

The Smart Villages project is run by an independent team based at Oxford and Cambridge Universities. It aims to examine options and best practice for bringing energy to rural communities across the developing world, including new technologies, entrepreneurial business models and enabling policy frameworks, as well as exploring innovations in productive use of energy to help drive rural development.

The workshop focused on some of the technical and policy challenges and opportunities in the field of rural off-grid energy, and explored ways in which academies and networks may be able to collaborate further on these issues.

Some of the principal contributors to the workshop were Prof Sir Brian Heap, previous Foreign Secretary of the Royal Society, Prof Oyowale Tomori, President of the Nigerian Academy of Science, Dr Bernie Jones, previous Head of International Policy at the Royal Society, Dr John Holmes, who previously led the energy policy activities of the European Academies Science Advisory Council and Prof Howard Alper, previous science Advisor to the government of Canada and Co-Chair of the Global Network of Science Academies.

### ***Bilateral with the Benin National Academy of Sciences, Arts and Letters***

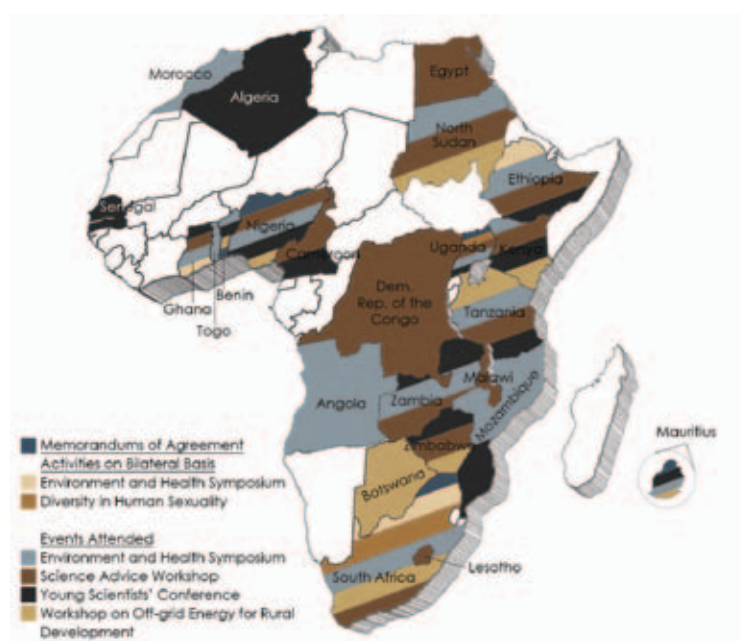
ASSAf signed a MoU with the Benin National Academy of Sciences, Arts and Letters In March 2016 at the IAP Conference in Hermanus.

Through the MoU, the academies agreed to:

- exchange publications and inform each other about activities;
- promote collaboration in areas of mutual scientific interest;
- promote the exchange of scholars;
- co-operate in the development of evidence-based science advice to governments and civil society.

This bilateral agreement fits well with ASSAf's African collaboration strategy, which together with NASAC aims to strengthen academies in Africa and help establish new ones in countries where they do not exist. This bilateral with Benin seeks to strengthen relations between ASSAf and other Francophone countries.

ASSAf's collaboration within Africa is summarised in the map that follows.



## **National**

### ***ESASTAP Plus***

ASSAf partnered with a number of organisations (based in South Africa and Europe) in the implementation of the European-South African Science and Technology Advancement Programme (ESASTAP) Plus, an instrument that aims to strengthen technology, research and innovation cooperation between South Africa and the European Union (EU). ASSAf was engaged in road shows to disseminate information about Horizon 2020 and produced the first quantitative report assessing South Africa's participation in the 7<sup>th</sup> Framework Programme (FP7).

The report entitled *Insights into South Africa's Participation in the 7<sup>th</sup> Framework Programme for Research and Technological Development of the European Commission* was launched on 7 December 2015 in Pretoria.

South Africa's participation in FP7 resulted from researcher expertise in a particular focus area; established networks resulting in South African researchers being automatically drawn into the collaborative activities; and the inclusion of South African researchers to strengthen the global character of a project.

Recommendations of the report range from capacity building to strengthening support to South African researchers, addressing project management challenges, to dissemination of the research project outputs.

### **ESASTAP 2020**

The new ESASTAP 2020 project was launched in Cape Town on 25 and 26 February 2016. The project aims at advancing further the EU-SA bilateral STI cooperation, building on the work and results of three preceding ESASTAP projects.

On the first day of the inaugural meeting, ESASTAP 2020 hosted its first workshop entitled ESASTAP 2020 Workshop on Science for Policy Advice. The workshop coincided with the IAP Conference on Science Advice that was hosted by ASSAf in Hermanus and provided an opportunity for a networking dinner.

ASSAf's responsibility will be to assess the participation of South Africa in Horizon 2020 programmes.

### **2.3.2 Young Scientist Activities**

#### **ASSAf/TWAS-ROSSA Young Scientists' Conference**

Women's empowerment and research being conducted across Africa to address gender equality challenges were addressed at the fifth ASSAf Annual Young Scientists' Conference which was held from 16 – 18 September 2015 in Boksburg, Gauteng.

The conference was hosted in partnership with TWAS-ROSSA, the DST, NRF, the Organisation for Women in Science in the Developing World South African National Chapter, GenderInSITE and the South African Young Academy of Science.

The theme of the conference was aligned to the AU year theme, Women's Empowerment, and was titled Inspiring Change post-2015: The Role of Science, Technology and Innovation in Empowering Women in Africa.

The Minister of Science and Technology, Mrs Naledi Pandor, delivered the keynote address on 16 September and Ms Susan Shabangu, Minister in the Presidency responsible for Women, addressed the conference on 17 September 2015. Prof Mamokgethi Phakeng, DVC Research at Unisa, addressed the conference on the topic The Invisibility of African Women and the Masculinity of Power.

An AU declaration earlier in 2015 noted that despite positive achievements registered recently in decision-making, women who make up the largest proportion of our population, still remain at risk and impoverished due to the challenges caused by social, economic and political marginalisation, gender-based violence and discrimination against women.

OWSD has recognised women as the greatest resource any country possesses. Providing opportunity and encouragement to girls and women in science and engineering are powerful ways of harnessing this resource for the development of the African continent.

The conference focused on four key issues relevant in the area of women's empowerment and the inter-relations between them:

- Promotion of gender equality in science, technology, engineering, and mathematics.
- Feminisation of poverty.
- Women and health.
- Women and leadership.



The NRF and TWAS-ROSSA sponsored 24 young scientists from Africa (excluding South Africa), while ASSAf and GenderInSITE sponsored the South African-based young scientists. The Chinese Embassy in South Africa funded two participants from China and the Royal Society of Chemistry in the United Kingdom sponsored three participants to attend the conference. The conference featured 36 oral and 24 poster presentations by young scientists.

The conference was attended by 135 participants, including young scientists from: Algeria, Benin, Cameroon, China, Ethiopia, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Senegal, South Africa, Tanzania, Uganda, United Kingdom, Zambia and Zimbabwe. The NRF, ASSAf, SAYAS, OWSD, TWAS, *The Conversation*, DST-Horizon 2020, and GenderInSITE exhibited their work throughout the conference.

On the last day of the conference, the South African Agency for Science and Technology Advancement (SAASTA) and the aforementioned organisations were given a platform to actively interact with the participants during the capacity enhancement session.

### **Lindau Foundation Agreement**

ASSAf, as academic partner, has 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.

This year, ASSAf selected and submitted ten names of young scientists in the field of physics to the Lindau Foundation. If selected, these young scientists will attend the meeting in June 2016 in Lindau, where they will have an opportunity to meet Nobel Laureates.

In addition to the young scientists, ASSAf has nominated a science journalist to accompany the participants to the 66<sup>th</sup> Lindau Nobel Laureate Meeting. The science journalist's role will be to interview the participants at the meeting and raise awareness of the Lindau Nobel Laureate Meetings within South Africa.

### **2.3.3 Gender and Science, Technology and Innovation**

ASSAf hosts the OWSD National Chapter, through which all ASSAf's activities on gender and STI are implemented. The OWSD SA executive committee, chaired by Prof Jennifer Thomson, continued to provide strategic direction to OWSD activities and met several times in 2015/16.

OWSD SA has established a strong online presence, with a website, and Twitter and Facebook platforms as a way of communicating with its members, similar organisations and persons/organisations with an interest in gender and STI.

The OWSD South Africa Facebook page had 85 Likes by the end of March 2016. The most engaging posts over the reporting period were about OWSD member, Prof Ameenah Gurib-Fakim's election as Mauritius's first president and ASSAf's 20-Year celebration – total posts were 77 for the year. The OWSD South Africa Twitter page (@OWSD\_SA) had 540 Followers by the end of the financial year.

Key strategic objectives were focused on increasing the number of OWSD members in South Africa and on hosting women for science events.

The OWSD National Chapter also oversees the implementation of GenderInSITE activities.

ASSAf's activities on women in science have increased dramatically due to GenderInSITE funding. Greater impact is evident through increased social media presence and an increasing number of invitations to participate in national and international events. The application of the gender lens is a notion that is becoming widely accepted.

### **GenderInSITE**

ASSAf is the southern African focal point for GenderInSITE. The key objectives of GenderInSITE are to:

- Raise the awareness of policymakers in science institutions, academies and other decision-making bodies about the gender dimension of SITE for sustainable development.
- Demonstrate in key issues and sectors how a gender analysis of SITE can improve development.
- Promote the use of gender assessment to reveal the differential impact of SITE on the lives of women and men.

In pursuit of these objectives the GenderInSITE focal point participated in and arranged a number of activities that aimed at applying the gender lens. These included:

- Gender Summit 5, 28 – 30 April 2015, Cape Town – showcased achievements in an exhibition at the first Gender Summit held in Africa.
- Gender Mainstreaming in Science Education Workshop, 27 – 28 May 2015, Nairobi – GenderInSITE partnered with the IAP and NASAC to host a workshop on mainstreaming gender in science education.
- Gender Mapping Planning Meeting, 21 – 22 July 2015, Harare – a planning meeting to address gender mapping in SITE was held at the UNESCO Regional Office for southern Africa.
- National Women in Water Consultative Conference, 31 August 2015, Pretoria – Attended by more than 400 participants, this event provided an opportunity for GenderInSITE to raise awareness around the importance of applying the gender lens in decision-making on water issues. Prof Roseanne Diab participated in a roundtable discussion on Women in Science and Engineering.
- World Social Science Forum, 13 – 16 September 2015, Durban – Prof Roseanne Diab participated as a speaker in a session on Achieving Gender Equality: Mobilising Social Science and Human Rights, which was organised by UNESCO's Management of Social Transformations Programme.
- ASSAf-TWAS-ROSSA Young Scientists' Conference, 16 – 18 September, 2015, Boksburg – Women's empowerment and the scientific research being conducted across Africa to address gender equality challenges were addressed at the fifth ASSAf Annual Young Scientists' Conference. GenderInSITE hosted a roundtable discussion on Applying the Gender Lens in Research and Innovation.
- DST-Howard University Women in STEM Conference, 27 – 29 October 2015, Pretoria – GenderInSITE participated in the planning of the conference. The OWSD National Chapter Vice-Chair, Prof Sibusiso Moyo, gave a presentation on OWSD and GenderInSITE as champions of the application of the gender lens in STI and her role in training women. The event, which will become an annual event, provided a networking and funding opportunity for young women.
- 7<sup>th</sup> Gender Summit, 6 – 7 November 2015, Berlin – Prof Roseanne Diab participated in a GenderInSITE sponsored panel on Transforming Policies in Funding, Hiring and Publishing.
- Annual Meeting of Africa Science Academies, 29 November – 2 December 2015, Nairobi – The focus of AMASA in 2015 was non-communicable diseases. GenderInSITE hosted a roundtable discussion on Applying a Gender Lens to Non-communicable Diseases, ensuring that the commitment of the AMASA meetings to consider gender is maintained.
- GenderInSITE: Igniting Conversations on STI Workshop, 7 December 2015, Pretoria – The aim of the workshop was to raise awareness about the GenderInSITE initiative and to provide a platform for discussions on gender in STI policymaking and implementation.
- Science Forum South Africa, 8 – 9 December 2015, Pretoria – GenderInSITE hosted a session on Applying the Gender Lens in STI: Where are we now and what to do next?, which focused on gender mainstreaming in STI. The panel discussion was facilitated by TWAS Executive Director, Prof Romain Murenzi. Panellists were Prof Jennifer Thomson (Chair of the OWSD SA National Chapter) and Dr Peggy Oti-Boateng (UNESCO Regional Office for Southern Africa).

### **Women for Science: Inclusion and Participation in Academies of Science**

The publication of the report, *Women for Science: Inclusion and Participation in Academies of Science*, which was launched on 29 February 2016 at the IAP Conference in Hermanus, was a major achievement. The study was supported by IAP and coordinated by ASSAf, together with three partners: OWSD international, the Inter-American Network of Academies of Science (IANAS) and NASAC.

It was the first comprehensive survey of member academies of the IAP and found that women's representation and participation in national science academies globally are insignificant despite efforts to promote the role of women in science.

The average share of women members across 69 national science academies is 12%. In just under one half, 30 academies from 69, the share of women members was either 10% or less.

National academies with the largest shares of women members are the Cuban Academy of Sciences (27%) and the Caribbean Academy of Sciences (26%). ASSAf features third with 24% women members.

The report received extensive media coverage nationally and internationally. The scientific journal *Nature* carried a prominent article on the survey, as did *IT WEB*, *University World News*, *China Daily US* and *SciDev. Net*.

**Table 3: Programme 3: Performance Indicators for the 2015/16 Financial Year**

Strategic objective	Planned target	Performance indicator	Actual performance 2014/15	Actual performance 2015/16	Deviation	Status	Comment
Collaborate with national, regional and global science organisations	1	No. meetings of African science academies attended	5	8	+7	Exceeded target	<ul style="list-style-type: none"> <li>- NASAC- Leopoldina Meeting in Kenya: April 2015</li> <li>- Environment and Health Symposium</li> <li>- Mathematics Symposium</li> <li>- Gender mainstreaming in Science Education : May 2015</li> <li>- AMASA11: Nov 2015</li> <li>- African Science Advice Workshop</li> <li>- Smart Village Workshop</li> <li>- InterAcademy Partnership Conference and General Assembly</li> </ul>
Promote young scientists' activities	1	No. young scientists conferences hosted	1	2	+1	Exceeded target	<ul style="list-style-type: none"> <li>- Annual Young Scientist Conference: Sept 2015</li> <li>- Annual ASSAf Young Scientists' Conference and African Young Graduate and Scientists' Conference co-hosted with HSRC</li> </ul>
	2	No. young scientists participating in IAMP, IAP (WEF), Lindau Laureate meetings	2	6	+4	Exceeded target	Increased activities
Promote women for science activities	8	No. new members of OWSD National Chapter	8	120	+112	Exceeded target	Targeted membership drive
	1	No. women for science events hosted	1	6	+5	Exceeded target	Increased activities due to external funding from GenderInSITE

## 2.4 Programme 4: Policy 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 the reporting year, ASSAf published three consensus studies, of which two are reported in this section, viz. *Diversity in Human Sexuality: Implications for Policy in Africa* and *The State of Biosafety and Biosecurity in South Africa*, and the remaining one under the Liaison Programme.

ASSAf also produced three conference or workshop proceedings reports, viz. *On Being Controversial: The Humanities reach out*, *Measuring Deprivation in Order to Promote Human Development in South Africa* and *Proceedings of Environment and Health Symposium*.

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 (STEM) 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.

Strategic objectives of this programme are to:

- Provide evidence-based scientific advice to support policy development.
- Ensure effective dissemination and uptake of reports.

The Academy's full suite of evidence-based projects is summarised below.

### 2.4.1 Health Studies

The ASSAf Health Standing Committee provides strategic direction to ASSAf's health-related studies.

#### ***Diversity in Human Sexuality: Implications for Policy in Africa***

ASSAf launched a consensus study on *Diversity in Human Sexuality* on 10 June 2015 on the side-lines of the 7<sup>th</sup> SA AIDS Conference in Durban.

The guest speaker at the launch was Mr Eusebius McKaiser, a political analyst, broadcaster and writer. The event was attended by, among others, Mr Steve Smith (Health Attaché of the US Diplomatic Mission to SA), Mr Kizitos Okisai (Regional Representative for the United Nations High Commission for Refugees), panel members, representatives from various NGOs, academic institutions and conference delegates.

The report, which was undertaken in collaboration with the Uganda National Academy of Sciences, found that although two-thirds of countries in the world no longer outlaw lesbian, gay, bisexual, transgender and intersex (LGBTI) relationships, same-sex relationships are still illegal in 76 countries.

There is evidence that such laws precipitate negative consequences not just for LGBTI persons and communities, but also for societies as a whole, including the rapid reversal of key public health gains, increases in levels of social violence, and the diversion of attention from sexual and other violence against women and children.

Thirty-eight of 53 African nations criminalise homosexuality, thereby imposing varying degrees of legislative restrictions on sexual desires and practices, and on the fulfilment of the human rights of individuals.

Furthermore, the stigmatisation and criminalisation of homosexuality have made public health interventions, particularly with respect to HIV prevention and treatment, difficult to implement effectively.

The report examines the extent to which science supports any of the arguments in favour of criminalising sexual and gender diversity.

The report generated 17 media reports, of which one was in the science journal *Nature*. In the same issue, *Nature* published an editorial on the findings of the consensus study. There were also three radio interviews with panel members on SAfm, Pretoria FM and 702-Talk with Aubrey Masango.



## **Diversity in Human Sexuality Dialogue**

ASSAf subsequently hosted a dialogue on Diversity in Human Sexuality based on the report on 6 August 2015 in Johannesburg.

The dialogue was well attended by diverse stakeholders from academia, civil society and government, who had an opportunity to engage with the study panellists. The purpose of the dialogue was to discuss implications of the report on policy, particularly in the light of legislation criminalising homosexuality on the continent.

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

This consensus study, which is currently underway, followed from a workshop on the Education of Health Professionals held in 2012. It was recognised that there is a need for a consensus view on the education and training of health professionals and other healthcare workers in South Africa to consolidate current efforts and enhance new efforts to address the severe quantitative and qualitative shortfall in the health workforce.

ASSAf was identified as the most appropriate body to undertake such a study, which commenced in 2014, with seed funding from the US Health Resources and Services Administration facilitated by the Stellenbosch University Rural Medical Education Partnership Initiative (SURMEPI).

During the reporting period, good progress has been made and the report is expected to be completed in the next financial year.

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

ASSAf is currently undertaking a consensus study on the Ethical, Legal and Social Issues Related to Human Genetics and Genomics in South Africa.

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.

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 and Technology to draft policy, regulations and guidelines on matters pertaining to human genetics and the human genome.

## **Mental, Neurological, and Substance Use (MNS) Disorders**

ASSAf is undertaking a consensus study on Provider Core Competencies for Improved Mental Health of the Nation following a workshop held in May 2014 where the implementation of core competencies for MNS Disorders was explored.

Globally, over two-thirds of people with mental, neurological and substance use 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 (7.4%). 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 (HPCSA), as well as other training and regulatory bodies.

## Environment and Health Symposium

A joint symposium on Environment and Health was hosted by ASSAf, the German National Academy of Sciences Leopoldina, the Ethiopian Academy of Sciences (EAS), and the Ghana Academy of Arts and Sciences (GAAS). The symposium, held in June 2015 in Pretoria, was funded by a grant from the Volkswagen Foundation in Germany.

The objectives of the event were to highlight key environmental challenges and their implications for human health in sub-Saharan Africa and Germany. The symposium was hosted with a view to identifying future research needs and assessing possible solutions to current environmental health issues and how these could be mainstreamed into science, society and policymaking.

The symposium was well attended and included members of the public with a keen interest in environment and health. A total of 17 speakers from South Africa, Ghana, Ethiopia and Germany gave presentations focusing on four key themes:

- Air Pollution.
- Metal Exposure.
- Water Pollution.
- Solar Ultraviolet Radiation.

In addition, 22 young scientists from African countries attended the conference and presented posters in line with the four key themes.

The keynote lecture was presented by Prof Jacqueline McGlade, Chief Scientist of the United Nations Environment Programme, who spoke on Outlooks for a Healthy Planet and Human Well-being.

The second day concluded with a roundtable discussion on Strengthening Environmental Health Services to Support a Healthy Society.

### 2.4.2 Biosafety and Biosecurity Studies

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

#### *State of Biosafety and Biosecurity in South Africa*

ASSAf launched a consensus study report entitled *The State of Biosafety and Biosecurity in South Africa* on 23 July 2015 in Pretoria. The report evaluates existing measures and capacity to detect, identify, control and prevent the natural, accidental or deliberate spread of infectious agents. It comments on the relationship between science and safety and addresses shortcomings, strengths and gaps in the laws and their implementation, as well as the practices relating to biosafety and biosecurity at laboratory level.

Key findings from the study include poor education and/or training on research ethics for life scientists, inadequate compliance with the statutory obligations to report Notifiable Medical Conditions, the lack of a database of both public and commercial laboratories in the country and a low level of awareness among life scientists about national and international conventions, laws and regulations related to their research.

Research and development in the life sciences are important elements of South African growth and development and are essential to address the needs of the country. The ASSAf study contributes towards ensuring that biosafety and biosecurity are properly observed in life science research as it is in the interests of all South Africans and that of the life science community.

On education and awareness raising, several findings were made. A survey among practising life scientists found that education and/or training on research ethics, including issues such as scientific misconduct (falsification, fabrication and plagiarism), is not routine for life scientists. Such training is essential to ensure the integrity of science in South Africa. Biosafety training is not regularly conducted for staff working in laboratories, nor was a test of competence routinely required. There was also a low level of awareness among life scientists about national and international conventions, laws and regulations related to their research.

In this regard, the report urges the Department of Health to consider regulations requiring laboratory staff to undergo biosafety training that includes an assessment of competence.

The report provides guidance on how recommendations can be implemented in a manner that can improve the state of biosafety and biosecurity in South Africa.

These are grouped under the following four themes, namely

- Improving the capacity to detect and respond to infectious disease outbreaks.
- Education and awareness raising.
- Ethics review.
- Scientific openness and transparency.

There were four media articles on the report after the launch.

### **Regulatory Implications of New Genetic Engineering Technologies**

This consensus study, which is being undertaken on behalf of the DST, aims to investigate the biosafety implications of new genetic engineering technologies and the robustness of current biosafety regulations to accommodate the new technologies.

## **2.4.3 Energy and Environment Studies**

### **State of Green Technologies in South Africa**

ASSAf continued to disseminate the findings of the consensus study *The State of Green Technologies in South Africa*, which was published in November 2014. The report was featured in an article in the *South African Journal of Science* in the March/April 2015 issue.

The report was also referenced by the DST Director-General in his address at the African regional dialogue focusing on the Low Carbon Technology Partnership initiative hosted by National Business Initiative in partnership with the World Business Council for Sustainable Development on 4 September 2015.

The study was also reported in *Earthworks* magazine (Issue 28 of October/November 2015).

Prof Roseanne Diab, Executive Officer, was an invited speaker at a workshop on green technologies hosted by the Ethiopian Academy of Sciences (EAS) in January 2016.

The ASSAf report informs and frames a similar consensus study report to be undertaken by the EAS.

### **South Africa's Technical Readiness to Support Hydraulic Fracturing**

ASSAf was commissioned by the DST to undertake a consensus study on the country's technical readiness to support hydraulic fracturing.

The main objective of the study is to establish the readiness of the science, engineering and technical sectors of South Africa to support shale gas exploration and exploitation in South Africa. The study is nearing completion.

## **2.4.4 Education Studies**

The Science, Technology, Engineering and Mathematics (STEM) Standing Committee had three main activities in the reporting year: the ongoing initiatives of the Agricultural Education and Training (AET) consensus study, the *La main à la pâte* (LAMAP) pilot project, as well as a Mathematics Symposium.

### **Revitalising Agricultural Education and Training**

ASSAf is undertaking a consensus study on AET, with the main aim being to identify the challenges facing the AET sector in South Africa and to provide recommendations that will ensure efficient and effective education and training. The study is funded by the Agricultural Research Council and the Oppenheimer Memorial Trust.

The study is expected to be completed in the next financial year.

### **LAMAP Pilot Project**

An innovative intervention to stimulate learners' interest in science, based on the French *Académie des*

Sciences programme known as *La Main à la Pâte (LAMAP)* was launched in November 2012 by ASSAf in collaboration with the French Academy, as part of the France-South Africa Season.

A group of South African trainers drawn predominantly from Gauteng higher education institutions (HEIs) was trained in inquiry-based science education (IBSE) by two French trainers.

The programme was implemented as a pilot project in ten primary schools in the Tshwane District. The ten schools consist of township schools from Mamelodi, Atteridgeville and Eersterust and former Model C schools around Pretoria. It was implemented with the cooperation of the Gauteng Department of Education and the Tshwane South District.

The project was evaluated at the end of 2015 after a three-year pilot phase. The evaluation was very positive but various recommendations were made that will see a different role for ASSAf in the future. A consultative meeting involving various stakeholders is being planned to decide on the future of the project.

### **Mathematics Symposium**

The ASSAf-Leopoldina-Alexander Von Humboldt Foundation Mathematics Symposium was held from 9 to 11 March 2016 at the Stellenbosch Institute for Advanced Study (STIAS). It provided a platform for scientific exchange among senior and young scientists from the BRICS countries and Germany in the field of mathematics.

The symposium focused on partial differential equations (PDEs) and their applications and highlighted the importance, vastness and relevance of PDEs in solving everyday problems in a number of spheres such as engineering, physics, finance, etc. Speakers included experts from Germany, Italy, China, Brazil, Russia and South Africa.

### **2.4.5 Humanities Studies**

Activities in the humanities field are overseen by a Standing Committee on the Humanities, which was established in 2012 following one of the recommendations of the ASSAf consensus study on *The State of Humanities in South Africa*.

#### **On Being Controversial: The Humanities Reach Out**

The proceedings report of an international conference entitled *On Being Controversial: The Humanities Reach Out*, which was held in June 2014 in Pretoria, was published in October 2015. The report was disseminated to conference participants, relevant government departments and ASSAf Members.

### **2.4.6 Poverty Studies**

The Standing Committee on Science for the Reduction of Poverty and Inequality (SCSfRPI) was revitalised and reconstituted with new membership in 2014. Their first activity was a two-day workshop on Measuring Human Deprivation to Promote Human Development, which was held on 9 and 10 June 2015.

#### **Measuring Human Deprivation to Promote Human Development**

The workshop aimed to bring together a diverse group of stakeholders to address potential threats to human development and challenges facing South Africa in its quest to address poverty and inequality.

Sessions on the first day of the workshop were dedicated to money-metrics measurement and multi-dimensional poverty, and the presentations and discussions focused on national poverty lines, poverty dynamics and income inequality. The focus of the second day was on measuring human development and disaggregating poverty, and the presentations and discussions focused on health and educational-based poverty measures, as well as child and gender poverty.

On the first day of the workshop, Prof Murray Leibbrandt (Chair of the SCSfRPI) was interviewed on the purpose of the workshop on *Building Tomorrow* show on Ubuntu Radio.

A workshop proceedings report was produced and is being disseminated.

The workshop provided a platform for public and academic sectors to engage. Stats SA attended the workshop, and engaged several scientists that participated in the discussion on poverty lines. The dis-



course resulted in a general understanding that the mechanism behind determining the national poverty lines needs to be reassessed and ultimately incorporated when examining poverty in South Africa.

**Table 4: Programme 4: Performance Indicators for the 2015/16 Financial Year**

Strategic objective	Planned target	Performance indicator	Actual performance 2014/15	Actual performance 2015/16	Deviation	Status	Comment
Provide evidence-based scientific advice to government	4	No. study proposals submitted to Council for approval	4	5	+1	Exceeded target	4 consensus study proposals & 1 assessment study proposal
	8	No. study proposals submitted to funding bodies	8	9	+1	Exceeded target	Proposals submitted to foundations (5), DST (2), private sector (1) & academy body (1)
	1	No. consensus study reports published	2	3	+2	Exceeded target	An additional consensus study report is reflected under Programme 6
	2	No. workshop reports published	-	3	+1	Exceeded target	Increased activities
	1	No. policymakers' booklets published	0	0	-1	Not achieved	Focus of activities was on publication of consensus study reports
	1	No. statements published	0	0	-1	Not achieved	Focus of activities was on publication of consensus study reports

## 2.5 Programme 5: Publications Programme

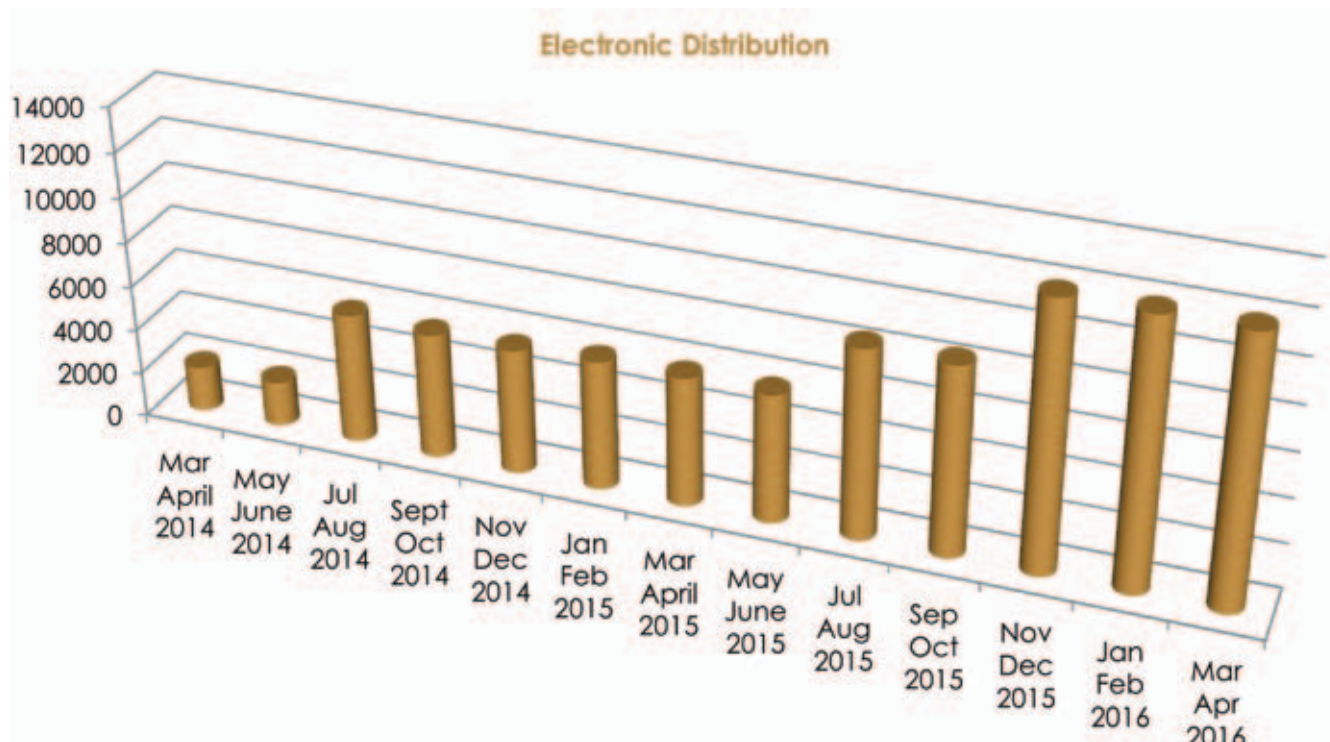
The purpose of this programme is to manage and produce ASSAf's flagship journal, the *South African Journal of Science*, and the science magazine, *Quest: Science for South Africa*.

### 2.5.1 South African Journal of Science

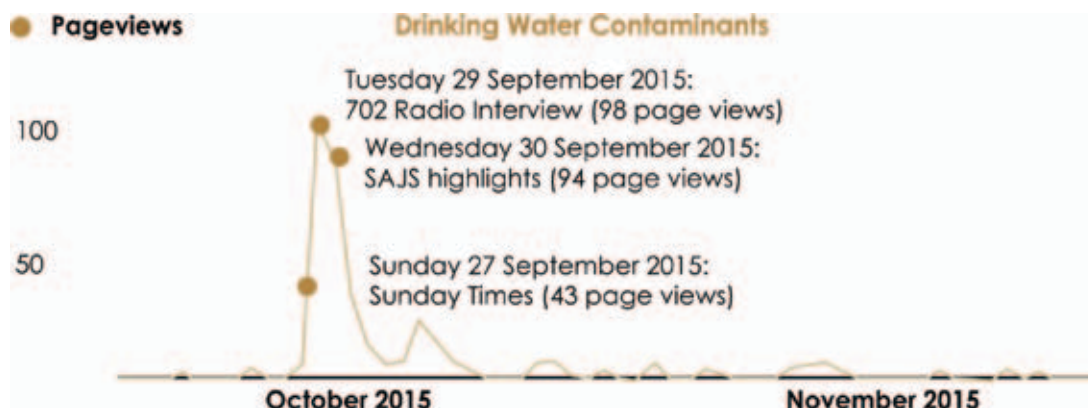
The *South African Journal of Science* (SAJS) is now in its 112<sup>th</sup> year of publication. There has been significant growth in the number of formal submissions to the journal – an average of 20% per year over the last five years. During the 2015/16 financial year, there were 471 formal submissions from 51 countries: 44% of submissions were from South Africa, 15% from the rest of Africa, 12% from China and 7% from India. Although the Thomson Reuters impact factor showed little change (from 1.03 in 2014 to 0.96 in 2015), the rejection rate in 2015/16 rose to 89% from 82% in 2014/15.

This increase in the number of submissions, without a proportional increase in the rejection rate, resulted in a large backlog of articles awaiting publication in 2015. A part-time copy-editor and proofreader was therefore appointed from 1 August 2015 to increase the production of articles, thereby decreasing the wait from acceptance to publication. The number of articles published increased from 96 (62 peer reviewed) in 2014/15 to 136 (93 peer reviewed) in 2015/16 – a 40% increase. The average delay between acceptance and publication decreased from nine months in April 2015 to five months in March 2016.

The number of visits to the SAJS website increased from 47 000 in 2014/15 to 52 000 in 2015/16 – an average of 4 330 visits per month and a growth of 12%. The social media pages also showed considerable growth: the number of Facebook Likes increased from 420 in April 2015 to 940 in March 2016 and the Twitter Followers increased from 200 to 640 in the same period. Electronic distribution of the full digital issues and featured articles (via the 'Highlights of the latest issue' email) rose from 5 400 recipients in April 2015 to about 12 000 recipients in March 2016 (shown below).



Monitoring of media reporting of published articles shows the impact of articles on the media as well as the influence of news articles on traffic to the published articles. For example, a Research Article on contaminants in drinking water was reported on locally in the *Sunday Times*, *Times Live* and Radio 702. On the day of the radio interview, traffic to the webpage for that article increased from an average of five views per day to nearly 100 views. A Scientific Correspondence on Shakespeare's pipe received 300 page views on one day following international media coverage by *Time*, *USA Today*, *CNN*, *BBC News* and *The Independent*.



An increase in the number of articles published resulted in an increase in production and distribution costs. The cost of replacing copies lost by the postal service was a further drain on resources. In October 2015, the ASSAf Council decided to discontinue the printed copies of the journal with effect from the January/February 2016 issue. The printing and distribution costs saved could therefore be invested in the maintenance and development of the SAJS website – the primary interface of the journal.

In February 2016, the SAJS website was upgraded to include article-level metrics for all articles published. Article-level metrics are metrics that indicate the impact of an article through views of the article page, downloads, citations, social media dissemination and media coverage. The impact of an article has traditionally been measured through the impact factor of the journal in which it has been published; article-level metrics provide a more informative measure of the overall performance and reach of the articles themselves. In less than a day after these metrics were introduced, recently published articles received up to 100 views and were downloaded up to 50 times.

The altmetric score – one of the article-level metrics included – provides a measure of an article's reach via Facebook, Twitter, social bookmarking, blogs and general news coverage. Social share buttons have also been included on article landing pages so that authors and readers can easily share articles via social media. The introduction of article-level metrics and social share buttons provides a user-friendly way to discover and navigate research published in the SAJS.

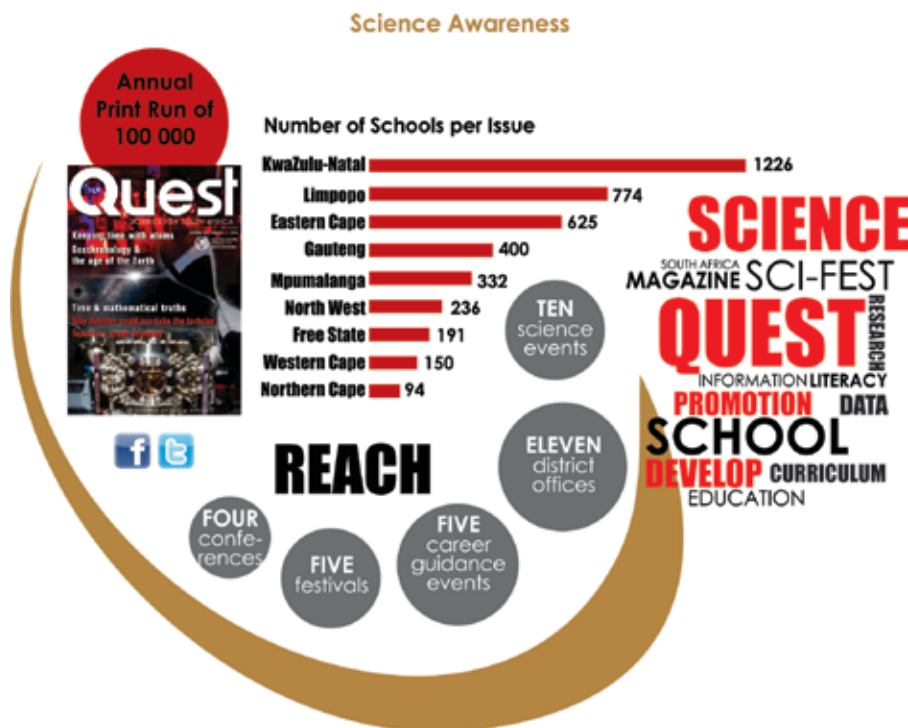
### 2.5.2 Quest: Science for South Africa

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 25 000 and a postal circulation of 21 650 copies per issue, the magazine is distributed to schools, public libraries, universities, government departments, embassies, media houses and subscribers. The balance is used for science promotion and career guidance.

*Quest* responded to many invitations to participate in science events across the country, sponsored many activities and visited science centres and provincial district education offices, all in an effort to raise science awareness.

The infographic gives an overview of some of the activities.



In 2015, Quest created a Facebook and Twitter presence. The reach is still very limited, 415 for Facebook and 25 Followers on Twitter, but presents a base from which to increase impact.

The Quest online presence is under consideration and trends and requirements are being explored to achieve the desired goal of science promotion and the sharing of content with other educational portals.

In order to address the distribution challenges due to unreliability of postal services and constant changes of school post office boxes, a strategy was devised to track the frequency of the returns and reduce the return rate to below 10% of the distributed copies.

**Table 5: Programme 5: Performance Indicators for the 2015/16 Financial Year**

Strategic objective	Planned target	Performance indicator	Actual performance 2014/15	Actual performance 2015/16	Deviation	Status	Comment
Produce, publish and disseminate ASSAf publications	4	Number of issues of Quest	4	4	-	Achieved	
	6	Number of issues of SAJS	6	6	-	Achieved	

## 2.6 Programme 6: Scholarly Publishing Programme

The Scholarly Publishing Programme (SPP) is regarded as a major intervention into the NSI in South Africa and makes a direct and significant contribution to the promotion of innovation and scholarly activity. 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.

The strategic objectives of the programme are to:

- Promote access to knowledge resources.
- Undertake quality assurance of journals, books and collected works in South Africa.
- Enhance scientific writing for research publishing.

Progress in the full suite of activities of this programme is summarised below.

### 2.6.1 Access to Knowledge Resources

#### SciELO SA: Open Access Platform

SciELO SA is an open-access (free to access and free to publish) searchable database of selected, high-quality South African scholarly journals. The SciELO SA platform aims to increase visibility, accessibility and searchability of South African accredited scholarly journals. During the past year, steady progress was made in increasing the number of titles and articles on the platform. The number of titles in the SciELO SA collection grew from 51 to 62. ([http://www.scielo.org.za/scielo.php?script=sci\\_alphabetic&lng=en&nrm=iso](http://www.scielo.org.za/scielo.php?script=sci_alphabetic&lng=en&nrm=iso))

#### Growth in SciELO SA Collection (31 March 2015 – 31 March 2016)

Date	Articles	Issues	Titles
31 March 2015	12 437	803	51
31 March 2016	17 603	1 138	62
Percent increase over 12 months	29 %		

#### Growth in SciELO SA Usage

Date	Site visits
April 2014 to March 2015	1 000 921
April 2015 to March 2016	1 378 555
Percent increase over 12 months	38%



Since its inception in 2009, the SciELO SA collection has been accessed more than four million times.

To ensure the adherence and compliance of SciELO SA to international standards and practices, the collection is assessed by the SciELO network headquarters in Brazil. SciELO SA has received very positive evaluations each time.

Two major impacts have been recorded for SciELO SA:

- The Department of Higher Education and Training's (DHET) revised Research Output Policy (2015) added SciELO SA to their list of accredited indices, with effect from 1 January 2016.
- Full text articles in the SciELO SA collection are now more visible globally due to the inclusion of the SciELO Citation Index in the Web of Science portal.

### **New Generation Technology**

The scientific community is becoming increasingly familiar with open access and its benefits. Scholarly journals are making the transition from traditional print to open access and online publishing. This transition to the digital and open access environment opens up opportunities for journals to become more visible and more cited and is resulting in publicly funded research in South Africa having a higher impact.

The following activities were conducted in 2015/16 to support editors with the transition from print to open online publishing and to take advantage of new generation technology

- A journal audit conducted in 2015 indicated that many South African scholarly journals were in need of support to enable them to be published using a fully-fledged online journal management system.
- All SciELO SA journals have implemented a Creative Commons license.
- ASSAf embarked on a pilot project using Open Journal Systems (OJS) to publish four SciELO SA journal titles. The purpose of this was to find a high quality, best practice, sustainable and affordable approach towards online and open access publishing.
- All SciELO SA journals now include digital object identifiers (DOIs) in their articles, which enables unique identification of an individual article and also tracking of the digital footprint and impact of the article over time.
- ASSAf entered into an agreement with Portico, to digitally archive all SciELO SA journal files in a dark archive. The value of this is to ensure an archive that does not grant public access and only preserves the information it contains. The purpose of a dark archive is to function as a repository for information that can be used as a failsafe during disaster recovery. One of the requirements for digital preservation of journals was that they had to have online ISSNs assigned. ASSAf worked with the National Library of South Africa to verify existing and assign new ISSNs. In October 2015, ASSAf started to transfer files (retrospective and current) from SciELO SA to the Portico server in the USA.
- Technology is revolutionising engagement in the research environment. ASSAf introduced a webinar service in 2015 which can be accessed at <http://webinar.assaf.org.za/>. Topics presented using webinars included:
  - Creative Commons Licensing.
  - Open Journal Systems.
  - Crossref and DOIs.
  - Retractions.

The webinars were attended by over 100 participants, including researchers, editors and publishers from all over the country and Africa, all of whom attended from the comfort of their offices.

- All SciELO SA journals were requested to reapply for inclusion in the Directory of Open Access Journals (DOAJ). DOAJ is an online directory that indexes and provides access to quality open access peer-reviewed journals. Only open access journals adhering to the very strict DOAJ criteria, are included in this platform.
- A scholarly publishing Help Page has been created through a wiki, where answers to most issues pertaining to scholarly publishing in South Africa can be found. (See <http://academyofsciencesa.wikispaces.com>)

### **Open Access Week**

Open Access Week is a global event and an opportunity for the academic and research community to continue to learn about the potential benefits of open access (OA) and to inspire wider participation in OA.

ASSAf plays a leading role in keeping OA on the national agenda, and demonstrated its leadership role in various ways during OA Week celebrated from 19 to 23 October 2015.

Three articles were published in *The Conversation*, co-authored by ASSAf staff and research experts in the field. The articles were re-published by various online media publishers, and shared on social media platforms. The articles followed a specific strategy: background and the problems encountered in terms of accessing information; stumbling blocks towards accessing quality research information; and OA and specifically SciELO SA as a solution.

### **Access to Core Commercial Databases**

A significant barrier to improvement in the scholarly performance of South Africa's researchers is lack of access to international literature. To address this problem, a national site license/s for access to high cost, commercial electronic full text and other journal databases is under investigation.

The final business case was submitted to DST and DHET at the end of November 2015. A meeting was held in December 2015 to discuss the way forward and ASSAf was requested to convene a workshop between the two departments and ASSAf, which took place on 11 February 2016. Further verification of the savings and the financial modelling then took place and the final business case was submitted at the end of March 2016.

A phase three of this project is envisaged whereby further deepening of the business case, modelling of possible top-slicing and the establishment of criteria for top-slicing and cost models for lobbying with universities and research institutions will be developed.

### **A-Z Resource of South African Scholarly Journals**

ASSAf conducted an audit of South African scholarly journal publications accredited by the DHET. The purpose of the audit was to establish the percentage of open access journals, the level of visibility and online presence, the status in terms of online journal management, as well as whether the journals adhere to the necessary quality controls in terms of proper online journal management.

The audit confirmed that South African scholarly journals need leadership and authoritative support to improve the online quality and visibility of South African scholarly output, which can be provided by experts at ASSAf.

ASSAf has been cooperating with the Centre for Research on Evaluation, Science and Technology (CREST) at SU to improve and expand on the list to serve as a master database of South African scholarly journal titles, with ASSAf as the custodian.

## **2.6.2 Quality Assurance of Journals, Books and Collected Works in South Africa**

### **Peer Review of Scholarly Journals, Books and Conference Proceedings**

ASSAf assisted the DHET in the evaluation of conference proceedings and books for subsidy purposes. The DHET focused on technical compliance with the policy, whereas ASSAf focused on content and quality and provided DHET with a report on each item under consideration. The evaluations took place from 4 – 6 August 2015. The process was commended for the fact that experts were used, broader and meaningful criteria were developed, and for its sense of fairness and transparency.

The new applications and re-applications of journals for DHET accreditation were evaluated through an *ad hoc* panel review on 25 November 2015. The peer-review process is centred on a multi-perspective, multi-disciplinary *ad hoc* evaluation panel appointed by ASSAf and comprising experts in the field. The panel evaluated 12 journals from various disciplines such as Law, Health, Management, Natural and Social Sciences.

The process of evaluating subject groups of South African journals continues. Six groups have been completed and the following three subject groups will now commence: Humanities II: Visual and Performing Arts (10 journals); Communications and Information Science (14 journals); Engineering and Architecture (15 journals).

The six groups that have been published to date are:

- Agricultural and Basic Life Sciences (<http://www.assaf.org.za/files/2011/02/SPP-Social-Agri-2010-WEB.pdf>).

- Law and Related Legal Fields (<http://www.assaf.org.za/files/2015/05/Law-final2.pdf>).
- Health Sciences and Related Medical Fields (<http://www.assaf.org.za/files/2015/05/Health-Science-30.9.2014-2.pdf>).
- Social Science and Related Fields (<http://www.assaf.org.za/files/2011/09/SPP-Peer-Review-Social-Sciences.pdf>).
- Religion, Theology and Related Fields ([http://www.assaf.org.za/files/reports/evidence\\_based/RTRF-Complete.pdf](http://www.assaf.org.za/files/reports/evidence_based/RTRF-Complete.pdf)).
- Humanities I: Classics, Literature and Languages (<http://www.assaf.org.za/files/reports/Humanities%20Literature.pdf>).

### **2.6.3 Research Publishing**

#### ***National Scholarly Book Publishers' Forum (NSBPF)***

The NSBPF had three meetings over the reporting period:

- Workshop on Open Access for Book Publishers on 24 August 2015. The presenter, Eelco Ferwerda from Open Access Publishing in European Networks (OAPEN) Foundation, gave an overview of the OA book publishing landscape, discussed OAPEN platforms and services and shared best practices for OA books. Two case studies were presented by book publishers: HSRC Press and SUNMeDIA. The workshop concluded with a discussion of potential opportunities for OA books for South African book publishers.
- Meeting in Durban on 14 September 2015. Some action points from the meeting include work on a best practice statement/booklet, draft terms of reference, and a theme for a scholarly book publishers' conference.
- Meeting in February 2016 that coincided with the quarterly meeting of the Publishers Association of South Africa (PASA).

#### ***National Scholarly Editors' Forum (NSEF)***

The NSEF has become an entrenched event in the ASSAf annual calendar and attendance has risen markedly since its inception. It is aimed at enhancing the quality of editing and management of scholarly journals. The 9<sup>th</sup> Annual Meeting of the NSEF was held on 9 September 2015.

The theme for the event was: Problems and Progress in Scholarly Publishing within the South African Context. The event was chaired by Prof Robin Crewe, Chair of the Committee on Scholarly Publishing in South Africa (CSPiSA) and 116 participants attended.

#### ***Committee on Scholarly Publishing in South Africa (CSPiSA)***

The CSPiSA oversees the work of the Scholarly Publishing Programme and met twice during the reporting year.

**Table 6: Programme 6: Performance Indicators for the 2015/16 Financial Year**

Strategic objective	Planned target	Performance indicator	Actual performance 2014/15	Actual performance 2015/16	Deviation	Status	Comment
Promote access to knowledge resources	10	Number of new titles on the open access platform	10	11	+1	Exceeded target	More journals joined the platform than initially planned
Undertake quality assurance of journals, books and collected works	2	Number of peer-review panels established	3	3	+1	Exceeded target	Increased activity
	2	Number of discipline-grouped peer-review panel reports published	3	3	+1	Exceeded target	Increased activity
	1	Number of National Scholarly Publishers' Forums hosted	1	1	-	Achieved target	
	1	Number of National Scholarly Editors' Forums hosted	1	1	-	Achieved target	
Enhance scientific writing for research publishing	2	Number of scientific writing courses presented	1	0	-2	Target not achieved	Funding constraints



# 3 Performance Information:



## 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 60 members who were selected based on their academic excellence and service to society. ASSAf continues to provide secretariat support and funding to support SAYAS activities.

### 3.2 New SAYAS Members Inaugurated

In 2015, SAYAS inaugurated ten young scientists, comprising 30% males and 70% females.

Surname	Name	Title	Gender	Age	Race	Institution	Area of Specialisation
Blichitz	David	Prof	Male	39	White	University of Johannesburg	Human and animal rights, political philosophy
Cloete	Karen	Dr	Female	35	White	iThemba Laboratory	Microbiology and psychiatry
Makatu	Makondelele	Dr	Female	42	Black	University of Venda	Psychology and community development
Mokhele	Motselitso	Prof	Female	35	Black	University of Fort Hare	Teacher education, professional development and leadership
Ngwala	Nosiphiwe	Dr	Female	30	Black	Rhodes University	Pharmacy, microbiology and water chemistry
Nkukwana	Thobela	Dr	Female	40	Black	Agricultural Research Council	Animal science
Rajaratnam	Kanshukan	Prof	Male	39	Black	University of Cape Town	Finance systems, engineering and operations research
Ross	Natasha	Dr	Female	27	Black	University of the Western Cape	Electro-analytical chemistry and nanotechnology
Roy	Srila	Dr	Female	35	Black	University of the Witwatersrand	Gender studies
Tshitangoni	Mpho	Dr	Male	39	Black	Department of Environmental Affairs	Environmental waste management and rural development

### 3.3 SAYAS General Assembly

SAYAS held its fourth General Assembly on 14 and 15 October 2015 at STIAS. The following people were elected as Executive Committee members for 2015/16.

- Dr Tolullah Oni (Co-Chair)
- Prof Voster Muchenje (Co-Chair)
- Dr Sahal Yacoob (Executive Member)
- Prof Joanna Vearey (Executive Member)
- Dr Mpho Tshitangoni (Executive Member)

### 3.4 Youth Perspectives on Science Advice

SAYAS, jointly with ASSAf, hosted a panel discussion on Young Academies and Science Advice on 3 March 2016 at UWC. The aim of the discussion was to provide a platform for young scientists to address the topic of science advice taking into consideration the role that young academies can play in providing science advice to governments. The theme of the panel discussion was Youth Perspectives on Science Advice to Governments.

Participants were Prof Sameh Soror, Egyptian Young Academy of Science (EYAS), Dr Tolullah Oni (SAYAS) and Dr Orakanoke Phanraksa of the Global Young Academy (GYA), Prof Iqbal Parker (ASSAf Council member) and Dr Natasha Ross (SAYAS).

### 3.5 TWAS-ROSSA/ASSAf Young Scientists' Conference

SAYAS partnered with ASSAf and TWAS-ROSSA to host the Annual Young Scientists' Conference. Details are provided in Section 2.3.2.

### 3.6 SAYAS Hosts Roadshows

SAYAS, supported by ASSAf, hosted its first roadshow on 18 March 2016 at the University of Venda. In the 2016/17 financial year SAYAS will spearhead hosting of roadshows at different universities in South Africa. The aim of the roadshows are to:

- create awareness about the young academy;
- introduce SAYAS to young scientists (in particular PhD candidates, postdoctoral fellows and academic staff) and early-career researchers from various academic discipline;
- promote SAYAS activities across the country, in particular targeting under-represented and historically disadvantaged universities;
- generate interest in SAYAS activities and ensure long-term diverse membership with regard to race, gender, scientific discipline and institution.

### 3.7 SAYAS Blog

SAYAS held its second national blogging competition for PhD students enrolled at South African universities. Since its launch in April 2015, the SAYAS blog has received over 3 000 viewers from 56 countries.

The SAYAS blog was in response to the lack of a strong online presence arising from South African post-graduate students. Its objective is to provide a platform to four PhD students to make monthly contributions on what it means to be a PhD student in South Africa and to raise awareness of science using social media.

Following the successful launch of the SAYAS blog, SAYAS identified four young scientists to contribute to the blog from January 2016 to December 2016. The bloggers who will be contributing to the SAYAS blog for 2016 are Odilile Patricia Lindiwe Ayodele (University of Johannesburg), Siphon Patrick Mabusela (University of Fort Hare), Simone Richardson (National Institute of Communicable Diseases), and Joey Hulbert (University of Pretoria).

The blog can be accessed at [www.sayasblog.com](http://www.sayasblog.com).

### 3.8 Science & Society in Africa Symposium

The 2015 Symposium on Science & Society in Africa, organised by SAYAS was held in Cape Town from 28 to 29 September 2015.

It focused on the potential of engagement outside the domain of traditional science communication – science non-fiction writing in both books and printed journalism, science fiction, and science in images and sound.

The symposium explored the human lens through which often complex science concepts may be viewed and through which public imagination might be captured and engaged, including – but not limited to – critiquing the impact of widely accessed TED talks; science writing in fiction and non-fiction formats; social media platforms, such as blogs, Twitter and Facebook; and less prominent science communication methods, such as citizen journalism and participatory visual methods.

The symposium was attended by Dr Tolu Oni (University of Cape Town and SAYAS Co-Chair), SARChI Chair Prof Roy Maartens (UWC), and curators of the Square Kilometre Array's Indigenous Astronomy exhibition, Emeritus Professor John Parkington (University of Cape Town) and Ms Sandra Proselandis. The symposium was also attended by sci-fi novelists, Ms Lauren Beukes and Prof Nnedi Okorafor. Among the participants were Grade 9 – 10 scholars from Khayelitsha's Centre of Science and Technology School who belong to the Optimistic Youth Reporters from the Children's Radio Foundation. The symposium was covered by SAfm, and the *Cape Times*.

### 3.9 Africa Science Leadership Programme 2016 Fellows

The Africa Science Leadership Programme (ASLP), an initiative of the University of Pretoria and the Global Young Academy, supported by the Robert Bosch Foundation and other major partners, will be hosting its second workshop at the University of Pretoria. The project is led by Professor Bernard Slippers, a member of SAYAS and a former GYA Co-Chair.

SAYAS will be represented by three of its members; Dr Aliza le Roux (University of the Free State), Dr Makondelele Makatu (University of Venda), and Dr Nosiphiwe Ngqwala (Rhodes University).



## 4 Performance Information:

### **South African Academy of Engineering**

The South African Academy of Engineering (SAAE) provides access to the wealth of knowledge and experience of its 186 members who are all eminent practitioners from all engineering disciplines. SAAE promotes excellence in the science and application of engineering for the benefit of the people of South Africa and the technological welfare of the nation by offering independent, evidence-informed advice.



In this endeavour SAAE collaborates with academic and scientific institutions with a similar mission and maintains bilateral relations with academies in other countries.

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

#### **4.1 Academy Lectures**

The 2015 Academy Lecture, entitled Karoo Dilemmas: Prospective Shale Gas Development in the Karoo – What is the Outlook?, was presented by Professor Maarten de Wit in Stellenbosch on 16 October 2015. The lecture was well attended by members of the SAAE and members of other technical and scientific societies and the public.

#### **4.2 Workshop for Members of the Academy**

In an endeavour to more effectively mobilise the knowledge and experience of its Fellows to better fulfill its mission of "...providing independent, evidence-informed advice ..." the Academy is engaging with Fellows to investigate possibilities. The first discussion in this regard in Cape Town in March 2015 is being followed up by arrangements for similar engagements in other centres.

#### **4.3 Induction of New Fellows**

Nine new Fellows were elected in June 2015 and were inducted in ceremonies in Gauteng and the Western Cape in October 2015. Dr Akiva Beebe, Regional Director: Sub-Saharan Africa of the Centre for Creative Leadership, was the guest speaker at the Gauteng ceremony and Dr Rob Adam, Project Director of the Square Kilometre Array, was the guest speaker at the Western Cape ceremony.

#### **4.4 Colloquium on an Engineering Perspective on Food Security**

In January 2016, the SAAE presented a colloquium on an Engineering Perspective on Food Security in South Africa. This colloquium was attended by 30 people from diverse disciplines who made substantial contributions to the discussion that was prompted by two keynote presentations. The record of the colloquium will lead to a Position Paper intended for use by the Academy in formulating advice on engineering-related aspects of the broad subject of food security in South Africa.

#### **4.5 Council of Academies of Engineering and Technological Sciences (CAETS)**

The Indian National Academy of Engineering (INAE) hosted the 23<sup>rd</sup> CAETS Council Meeting and Conference in New Delhi, India, from 12 to 16 October 2015. The SAAE was represented by Fellows Bob Pullen (President), Trueman Goba (Vice-President) and Prof Philip Lloyd. The overall theme of the Conference was Pathways to Sustainability: Energy, Mobility and Healthcare Engineering.

Prof Lloyd serves on the CAETS Council Energy Sub-committee charged with preparing a report entitled *Transitioning to Lower Carbon Economy: Technological and Engineering Considerations in Building and Transportation Sectors*. This committee met on the fringe of the conference to finalise a draft report to Council. Prof Lloyd played a prominent role in compiling and editing the report.

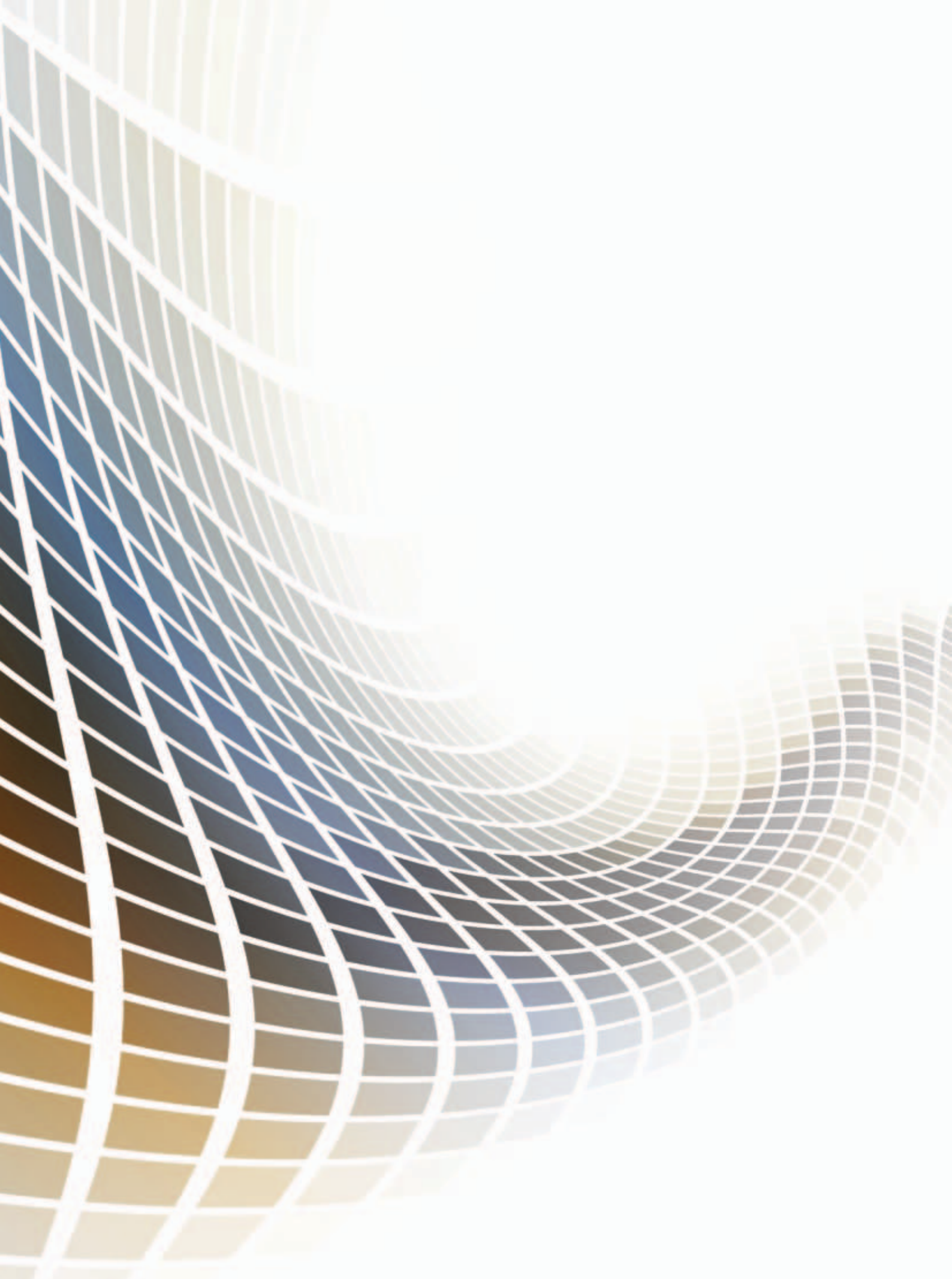
Funding for the SAAE affiliation fee to CAETS and attendance at the annual meetings in India was covered by a grant from the DST.

Dame Ann Dowling, President of the Royal Academy of Engineering (RAE) is the current President of CAETS. She was not able to represent CAETS at the General Assembly and Conference of the InterAcademy Partnership which was hosted by ASSAf in Hermanus in February 2016, but was represented by Fellow Bob Pullen.

#### **4.6 Cooperation with ASSAf**

SAAE cooperated with ASSAf in the study on the Technical Readiness of South Africa to Support Hydraulic Fracturing.

SAAE nominated Fellows to serve on a consensus study panel for a study led by ASSAf on the status of postgraduate research training in engineering in South Africa which was commissioned by the DST. Fellows Professors Tshilidzi Marwala, Tania Douglas, Cristina Trois, Bea Lacquet, Deresh Ramjugernath and Sue Harrison were elected to the eight-member panel. The first meeting of the panel took place on 29 March 2016.



# Part C:

## Financial Information

Annual Financial Statements for the Year Ended 31 March 2016 _____	61
Independent Auditor's Report to Parliament on the Academy of Science of South Africa _____	62
General Information _____	64
Council's Responsibilities and Approval _____	65
Audit & Risk Committee Report _____	66
Council's Report _____	67
Statement of Financial Position _____	68
Statement of Financial Performance _____	69
Statement of Changes in Net Assets _____	70
Cash Flow Statement _____	71
Statement of Comparison of Budget and Actual Amounts _____	72
Accounting Policies _____	74
Notes to the Annual Financial Statements _____	85
<b>Abbreviations</b>	
GRAP - Generally Recognised Accounting Practice	
IAS - International Accounting Standards	
PAA - Public Audit Act	
PFMA - Public Finance Management Act	

# Independent Auditor's Report to Parliament on the Academy of Science of South Africa

## Report on the Financial Statements

### Introduction

We have audited the financial statements of the Academy of Science of South Africa set out on pages 61 to 97, which comprise the statement of the financial position as at 31 March 2016, 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, comprising a summary of significant accounting policies and other explanatory information.

### Accounting authority's responsibility for the financial statements

The Council which constitutes the accounting authority, is responsible for the preparation and fair presentation of these financial statements 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 67 of 2001) (ASSAf Act) and for such internal control as the accounting authority determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### Auditor's responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing. Those standards require that we comply with ethical requirements, and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order 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. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

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 2016 and its financial performance and cash flows for the year then ended, in accordance with GRAP and the requirements of the ASSAf Act.

### Emphasis of matter

We draw attention to the matter below. Our opinion is not modified in respect of this matter.

Restatement of corresponding figures.

As disclosed in Note 22 to the financial statements, the corresponding figures for 31 March 2015 have been restated as a result of an error discovered during the year ended 31 March 2016 in the financial statements of the Academy of Science of South Africa (ASSAf) at, and for the year ended 31 March 2015.



## Report on other legal and regulatory requirements

In accordance with the Public Audit Act of South Africa (PAA), 2004 (Act 25 of 2004) and the general notice issued in terms thereof, we have a responsibility to report findings on the reported performance information against predetermined objectives of selected objectives presented in the annual report, compliance with legislation and internal control. We performed tests to identify reportable findings as described under each subheading but not to gather evidence to express assurance on these matters. Accordingly, we do not express an opinion or conclusion on these matters.

### Predetermined objectives

We did not audit performance against predetermined objectives, as the entity does not fall within the ambit of the PFMA and the entity-specific legislation does not require reporting on performance against predetermined objectives.

### Compliance with legislation

We performed procedures to obtain evidence that the entity had complied with legislation regarding financial matters, financial management and other related matters. Our material findings on compliance with specific matters in key legislation, as set out in the general notice issued in terms of the PAA, are as follows:

#### ASSAf Act

The entity did not in all material respects 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 (PFMA), 1999 (Act 1 of 1999).

#### Internal control

We considered internal control relevant to our audit of the financial statements and compliance with legislation. 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

Inadequate exercise of oversight responsibility regarding determining the framework for the review and monitoring of compliance with legislation.

#### Other reports

We draw attention to the following engagements that could potentially impact on the public entity's financial, performance and compliance-related matters. Our opinion is not modified in respect of these engagements that are either in progress or have been completed.

#### Audit-related services and special audits

An agreed-upon procedures engagement was performed on funding received from the Department of Science and Technology regarding the International Council for Science Regional Office for Africa hosted by ASSAf for the period 1 May 2015 to 31 March 2016. The report was issued to ASSAf management on 22 July 2016.



SizweNtsalubaGobodo Inc.  
Anton van den Heever Director  
Registered auditor 31 July 2016

# General Information

## **Nature of business and principal activities**

To promote and apply scientific thinking in the service of society

## **Accounting Officers**

Prof Batmanathan Dayanand Reddy

Prof Mohamed Iqbal Parker

Prof Himla Soodyall

Prof Sunil Dutt Maharaj

Dr Rob Martin Adam

Prof Achmat Cassim Bawa

Prof Hoosen Coovadia

Prof Brenda Wingfield

Prof Johann Mouton

Prof Stephanie Burton

Dr Shadrack Moephuli

Prof Zeblon Vilakazi

Prof Norman Duncan

## **Registered office**

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## **Business address**

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41 De Havilland Crescent

Persequor Park

Meiring Naudé Road, Lynnwood Pretoria

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## **Postal address**

P O Box 72135

Lynnwood Ridge

Pretoria

0040

## **Bankers**

Standard Bank

## **Auditors**

SizweNtsalubaGobodo Inc

Registered Auditors

# Council's Responsibilities and Approval

The 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 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 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 members to meet these responsibilities, the Council 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 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 members have reviewed the entity's cash flow forecast for the year to 31 March 2017 and, in the 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 auditor is responsible for independently reviewing and reporting on the entity's annual financial statements. The annual financial statements set out on pages 67 to 97, which have been prepared on the going concern basis, were approved by the Council on 27 July 2016 and were signed on its behalf by:



**Prof Batmanathan Dayanand Reddy**  
Council Chairperson

# Audit & Risk Committee Report

We are pleased to present our report for the financial year ended 31 March 2016.

## Audit & Risk Committee members and attendance

The Audit & 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 SD Maharaj (Chairperson)	Four
Prof BD Reddy	Four
Prof D van Wyk	Four

## Audit & Risk Committee responsibility

The Audit & Risk Committee reports that its revised terms of reference were approved and the committee discharged its responsibilities within its current terms of reference. The Audit & Risk Committee reports that it has complied with its responsibilities arising from section 51(1)(a2) of the PFMA and Treasury Regulation 27.1.

## The effectiveness of internal control

In the year under review, the outsourced internal audit service providers were released from their function for unsatisfactory performance and new service providers were appointed towards the end of the year under review. As a result of these developments, no internal audit work was performed and as a consequence, no internal audit report was produced in this reporting period. Due to budgetary constraints, the service is outsourced.

One of the functions of the internal audit is to provide the Audit & Risk Committee and management with assurance on the effectiveness of the internal controls. It is hoped that this function will be realised in the 2016/17 financial year. The Audit & Risk Committee and management intend to engage the internal audit function in order to ensure that internal controls are responsive and are aligned to the principles of good governance and that they are effective and efficient.

The Audit & Risk Committee noted/welcomes the external auditor's recommendations on internal control processes and procedures and commits itself to take corrective measures and suggested enhancement of the controls and processes as identified and recommended by the external auditors. ASSAf reports that it has complied with the requirement to submit the quarterly reports to the Executive authority.

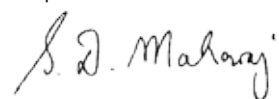
The Audit & Risk Committee is satisfied with the content and quality of monthly and quarterly reports prepared and issued by the Council of the entity during the year under review.

## Evaluation of annual financial statements

The Audit & Risk Committee has:

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

The Audit & Risk Committee concur with and accept the SizweNtsalubaGobodo's report on the annual financial statements, and are of the opinion that the audited annual financial statements should be accepted and read together with the report of the SizweNtsalubaGobodo's.



**Chairperson of the Audit & Risk Committee**

**Date: 25 July 2016**



# Council's Report

The members submit their report for the year ended 31 March 2016.

## 1 Incorporation

The entity was incorporated on 22 March 1996 and obtained its certificate to commence 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 in the attached annual financial statements and do not in our opinion require any further comment.

## 3 Going concern

We draw attention to the fact that at 31 March 2016, the entity had a Sustainability Fund of R4,183,859 and that the entity's net assets were R9,191,494.

The annual financial statements have been prepared on a 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 members continue to procure funding for the ongoing operations for the entity and Note 26 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 members are not aware of any matter or circumstance arising since the end of the financial year.

## 5 Council

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

Name	Nationality
Prof Batmanathan Dayanand Reddy	South African
Prof Mohamed Iqbal Parker	South African
Prof Himla Soodyall	South African
Prof Sunil Dutt Maharaj	South African
Dr Rob Martin Adam	South African
Prof Achmat Cassim Bawa	South African
Prof Hoosen Coovadia	South African
Prof Brenda Wingfield	South African
Prof Johann Mouton	South African
Prof Stephanie Burton	South African
Dr Shadrack Moephuli	South African
Prof Zeblon Vilakazi	South African
Prof Norman Duncan	South African

## 6 Auditors

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

# Statement of Financial Position as at 31 March 2016

Figures in Rand	Note(s)	2016	2015 Restated*
<b>Assets</b>			
Current Assets			
Other financial assets	5	7,154,587	6,673,776
Receivables from exchange transactions	6	741,138	591,984
Receivables from non-exchange transactions	7	1,115,423	4,472,736
Cash and cash equivalents	8	8,006,718	5,855,698
		<b>17,017,866</b>	<b>17,594,194</b>
Non-Current Assets			
Property, plant and equipment	3	684,034	629,477
Intangible assets	4	185,844	30,183
		<b>869,878</b>	<b>659,660</b>
Non-Current Assets		869,878	659,660
Current Assets		17,017,866	17,594,194
<b>Total Assets</b>		<b>17,887,744</b>	<b>18,253,854</b>
<b>Liabilities</b>			
Current Liabilities			
Payables from exchange transactions	11	2,027,715	2,812,777
Unspent conditional grants and receipts	9	2,735,875	-
ICSU ROA	10	3,932,660	-
		<b>8,696,250</b>	<b>2,812,777</b>
Non-Current Liabilities		-	-
Current Liabilities		8,696,250	2,812,777
<b>Total Liabilities</b>		<b>8,696,250</b>	<b>2,812,777</b>
Assets		17,887,744	18,253,854
Liabilities		(8,696,250)	(2,812,777)
<b>Net Assets</b>		<b>9,191,494</b>	<b>15,441,077</b>
Reserves			
Sustainability Fund		4,183,859	10,433,442
Operating Fund		5,007,635	5,007,635
<b>Total Net Assets</b>		<b>9,191,494</b>	<b>15,441,077</b>

# Statement of Financial Performance

Figures in Rand	Note(s)	2016	2015 Restated*
<b>Revenue</b>			
<b>Revenue from exchange transactions</b>			
Income from publications	12	340,645	421,353
Secretarial fees	12	40,000	34,076
Workshop fees	12	-	740,071
Membership fees	12	84,800	90,170
Insurance recoveries		21,127	-
Gains on disposal of assets		2,600	321
Interest received	12	877,519	987,176
<b>Total revenue from exchange transactions</b>		<b>1,366,691</b>	<b>2,273,167</b>
<b>Revenue from non-exchange transactions</b>			
<b>Transfer revenue</b>			
Government grants & subsidies	13	25,513,642	32,117,014
Local grants and donations	12	4,799,982	494,796
Foreign grants and donations	12	4,585,813	4,852,607
<b>Total revenue from non-exchange transactions</b>		<b>34,899,437</b>	<b>37,464,417</b>
		1,366,691	2,273,167
		34,899,437	37,464,417
<b>Total revenue</b>	<b>12</b>	<b>36,266,128</b>	<b>39,737,584</b>
<b>Expenditure</b>			
Employee-related costs	14	(17,392,549)	(14,319,642)
Depreciation and amortisation	3&4	(421,514)	(322,358)
Lease rentals on operating lease	18	(1,375,377)	(1,163,372)
Debt Impairment		(279,679)	-
Repairs and maintenance		(30,584)	(35,454)
General expenses	15	(23,036,609)	(20,116,560)
<b>Total expenditure</b>		<b>(42,536,312)</b>	<b>(35,957,386)</b>
		-	-
Total revenue		36,266,128	39,737,584
Total expenditure		(42,536,312)	(35,957,386)
<b>Operating (deficit) surplus</b>		<b>(6,270,184)</b>	<b>3,780,198</b>
Gain on foreign exchange		1,825	-
Fair value adjustments	16	18,776	(84,910)
		<b>20,601</b>	<b>(84,910)</b>
Operating surplus/deficit		20,601	(84,910)
(Deficit) surplus before taxation		(6,249,583)	3,695,288
Taxation		-	-
<b>(Deficit) surplus for the year</b>		<b>(6,249,583)</b>	<b>3,695,288</b>

# Statement of Changes in Net Assets

Figures in Rand	Sustainability Fund	Operating Fund	Total Reserves	Accumulated Surplus	Total Net Assets
<b>Balance at 01 April 2014</b>	<b>6,738,154</b>	<b>5,007,635</b>	<b>11,745,789</b>	<b>-</b>	<b>11,745,789</b>
Changes in net assets					
Surplus for the year	-	-	-	3,695,288	3,695,288
Transfer of surplus to Sustainability Fund	3,695,288	-	3,695,288	(3,695,288)	-
<b>Total changes</b>	<b>3,695,288</b>	<b>-</b>	<b>3,695,288</b>	<b>-</b>	<b>3,695,288</b>
Opening balance as previously reported	8,683,517	5,007,635	13,691,152	-	13,691,152
Adjustments					
Prior year adjustments	1,749,925	-	1,749,925	-	1,749,925
<b>Restated* balance at 01 April 2015 as restated*</b>	<b>10,433,442</b>	<b>5,007,635</b>	<b>15,441,077</b>	<b>-</b>	<b>15,441,077</b>
Changes in net assets					
(Deficit) for the year	-	-	-	(6,249,583)	(6,249,583)
Transfer of deficit to Sustainability Fund	(6,249,583)	-	(6,249,583)	6,249,583	-
<b>Total changes</b>	<b>(6,249,583)</b>	<b>-</b>	<b>(6,249,583)</b>	<b>-</b>	<b>(6,249,583)</b>
<b>Balance at 31 March 2016</b>	<b>4,183,859</b>	<b>5,007,635</b>	<b>9,191,494</b>	<b>-</b>	<b>9,191,494</b>

# Cash Flow Statement

Figures in Rand	Note(s)	2016	2015 Restated*
<b>Cash flows from operating activities</b>			
<b>Receipts</b>			
Fees		340,018	1,609,419
Grants		40,884,524	29,102,208
Interest income		877,519	987,176
		42,102,061	31,698,803
<b>Payments</b>			
Employee costs		(17,192,791)	(14,319,642)
Suppliers		(21,772,584)	(19,945,804)
		(38,965,375)	(34,265,446)
Total receipts		42,102,061	31,698,803
Total payments		(38,965,375)	(34,265,446)
<b>Net cash flows from operating activities</b>	19	<b>3,136,686</b>	<b>(2,566,643)</b>
<b>Cash flows from investing activities</b>			
Purchase of property, plant and equipment	3	(324,112)	(424,791)
Proceeds from sale of property, plant and equipment	3	-	2,049
Purchase of other intangible assets	4	(199,519)	(9,716)
Acquisition of additional financial assets		(462,035)	(426,562)
<b>Net cash flows from investing activities</b>		<b>(985,666)</b>	<b>(859,020)</b>
<b>Net increase/(decrease) in cash and cash equivalents</b>		<b>2,151,020</b>	<b>(3,425,663)</b>
Cash and cash equivalents at the beginning of the year		5,855,698	9,281,361
<b>Cash and cash equivalents at the end of the year</b>	8	<b>8,006,718</b>	<b>5,855,698</b>



# 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						
Publication fees	500,000	-	500,000	340,645	(159,355)	30
Secretarial fees	-	-	-	40,000	40,000	30
Membership fees	86,000	-	86,000	84,800	(1,200)	30
Insurance recoveries	-	-	-	21,127	21,127	
Gains on disposal of assets	-	-	-	-	2,600	2,600
Interest received - investment	550,000	-	550,000	877,519	327,519	30
<b>Total revenue from exchange transactions</b>	<b>1,136,000</b>	<b>-</b>	<b>1,136,000</b>	<b>1,366,691</b>	<b>230,691</b>	
Revenue from non-exchange transactions						
Transfer revenue						
Government grants & subsidies	26,290,000	-	26,290,000	26,446,104	156,104	30
Local grants and donations	240,000	-	240,000	4,799,982	4,559,982	30
Foreign grants and donations	5,059,000	-	5,059,000	4,585,813	(473,187)	30
<b>Total revenue from non-exchange transactions</b>	<b>31,589,000</b>	<b>-</b>	<b>31,589,000</b>	<b>35,831,899</b>	<b>4,242,899</b>	
'Total revenue from exchange transactions'	1,136,000	-	1,136,000	1,366,691	230,691	
'Total revenue from non-exchange transactions'	31,589,000	-	31,589,000	35,831,899	4,242,899	
<b>Total revenue</b>	<b>32,725,000</b>	<b>-</b>	<b>32,725,000</b>	<b>37,198,590</b>	<b>4,473,590</b>	
Expenditure						
Personnel	(16,691,733)	-	(16,691,733)	(16,903,260)	(211,527)	30
Lease rentals on operating lease	(1,232,921)	-	(1,232,921)	(1,375,377)	(142,456)	30
Repairs and maintenance	(13,702)	-	(13,702)	(30,584)	(16,882)	30
General expenses	(14,786,644)	-	(14,786,644)	(22,151,135)	(7,364,491)	30
<b>Total expenditure</b>	<b>(32,725,000)</b>	<b>-</b>	<b>(32,725,000)</b>	<b>(40,460,356)</b>	<b>(7,735,356)</b>	

Budget on Cash Basis						
	Approved Budget	Adjustments	Final Budget	Actual Amounts on Comparable Basis	Difference between Final Budget and Actual	Reference
<b>Figures in Rand</b>						
	-	-	-	(3,261,766)	(3,261,766)	
	-	-	-	-	-	
<b>Deficit before taxation</b>	-	-	-	(3,261,766)	(3,261,766)	
Deficit before taxation		-		(3,261,766)	(3,261,766)	
Taxation	-	-	-	-	-	
<b>Actual amount on comparable basis as presented in the budget and actual comparative statement</b>	-	-	-	(3,261,766)	(3,261,766)	
<b>Cash flow statement</b>						
<b>Reconciliation</b>						
<b>Net cash from (used) operating</b>						
<b>Operating deficit</b>						
				(3,261,766)		
<b>Basis difference</b>						
				6,398,452		
<b>Actual amount in cash flow statement</b>						
				3,136,686		
<b>Net cash from (used) investing</b>						
<b>Basis difference</b>						
				-		
<b>Actual amount in cash flow statement</b>						
				(985,666)		
<b>Actual amount in cash flow statement</b>				<b>2,151,020</b>		

The Accounting Policies on pages 74 to 84 and the Notes on pages 85 to 97 form an integral part of the annual financial statements.

# 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*).

These 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. They are presented in South African Rand and have been rounded off to the nearest rand.

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

These accounting policies are consistent with the previous period.

### 1.1 Presentation currency

These annual financial statements are presented in South African Rand, which is the functional currency of the entity.

### 1.2 Going concern assumption

The annual financial statements have been prepared on a 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.

### 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.

### **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 as the difference between the debtors carrying amount and the present value of estimated future cash flows discounted at the effective interest rate, computed at initial recognition.

## **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 recognised 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 residual value, and the useful life and depreciation method of each asset are reviewed at the end of each reporting date. If the expectations differ from previous estimates, the change is accounted for as a change in accounting estimate.

Reviewing the useful life of an asset on an annual basis does not require the entity to amend the previous estimate unless expectations differ from the previous 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.

## 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

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 lease-back).

## 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 Impairment of cash-generating assets

### Identification

When the carrying amount of a cash-generating asset exceeds its recoverable amount, it is impaired.

The entity assesses at each reporting date whether there is any indication that a cash-generating asset may be impaired. If any such indication exists, the entity estimates the recoverable amount of the asset.

Irrespective of whether there is any indication of impairment, the entity also test a cash-generating intangible asset with an indefinite useful life or a cash-generating intangible asset not yet available for use for impairment annually by comparing its carrying amount with its recoverable amount. This impairment test is performed at the same time every year. If an intangible asset was initially recognised during the current reporting period, that intangible asset was tested for impairment before the end of the current reporting period.

## Value in use

Value in use of a cash-generating asset is the present value of the estimated future cash flows expected to be derived from the continuing use of an asset and from its disposal at the end of its useful life.

When estimating the value in use of an asset, the entity estimates the future cash inflows and outflows to be derived from continuing use of the asset and from its ultimate disposal and the entity applies the appropriate discount rate to those future cash flows.

### Basis for estimates of future cash flows

In measuring value in use the entity:

- base cash flow projections on reasonable and supportable assumptions that represent management's best estimate of the range of economic conditions that will exist over the remaining useful life of the asset. Greater weight is given to external evidence;
- base cash flow projections on the most recent approved financial budgets/forecasts, but excludes any estimated future cash inflows or outflows expected to arise from future restructuring's or from improving or enhancing the asset's performance. Projections based on these budgets/forecasts covers a maximum period of five years, unless a longer period can be justified; and
- estimate cash flow projections beyond the period covered by the most recent budgets/forecasts by extrapolating the projections based on the budgets/forecasts using a steady or declining growth rate for subsequent years, unless an increasing rate can be justified. This growth rate does not exceed the long-term average growth rate for the products, industries, or country or countries in which the entity operates, or for the market in which the asset is used, unless a higher rate can be justified.

### Composition of estimates of future cash flows

Estimates of future cash flows include:

- projections of cash inflows from the continuing use of the asset;
- projections of cash outflows that are necessarily incurred to generate the cash inflows from continuing use of the asset (including cash outflows to prepare the asset for use) and can be directly attributed, or allocated on a reasonable and consistent basis, to the asset; and
- net cash flows, if any, to be received (or paid) for the disposal of the asset at the end of its useful life.

Estimates of future cash flows exclude:

- cash inflows or outflows from financing activities; and
- income tax receipts or payments.

The estimate of net cash flows to be received (or paid) for the disposal of an asset at the end of its useful life is the amount that the entity expects to obtain from the disposal of the asset in an arm's length transaction between knowledgeable, willing parties, after deducting the estimated costs of disposal.

### Recognition and measurement (individual asset)

If the recoverable amount of a cash-generating asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable amount. This reduction is an impairment loss.

An impairment loss is recognised immediately in surplus or deficit.

Any impairment loss of a revalued cash-generating asset is treated as a revaluation decrease.

When the amount estimated for an impairment loss is greater than the carrying amount of the cash-generating asset to which it relates, the entity recognises a liability only to the extent that is a requirement in the Standard of GRAP.

After the recognition of an impairment loss, the depreciation (amortisation) charge for the cash-generating asset is adjusted in future periods to allocate the cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

## Cash-generating units

If there is any indication that an asset may be impaired, the recoverable amount is estimated for the individual asset. If it is not possible to estimate the recoverable amount of the individual asset, the entity determines the recoverable amount of the cash-generating unit to which the asset belongs (the asset's cash-generating unit).

If an active market exists for the output produced by an asset or group of assets, that asset or group of assets is identified as a cash-generating unit, even if some or all of the output is used internally. If the cash inflows generated by any asset or cash-generating unit are affected by internal transfer pricing, the entity use management's best estimate of future price(s) that could be achieved in arm's length transactions in estimating:

- the future cash inflows used to determine the asset's or cash-generating unit's value in use; and
- the future cash outflows used to determine the value in use of any other assets or cash-generating units that are affected by the internal transfer pricing.

Cash-generating units are identified consistently from period to period for the same asset or types of assets, unless a change is justified.

The carrying amount of a cash-generating unit is determined on a basis consistent with the way the recoverable amount of the cash-generating unit is determined.

An impairment loss is recognised for a cash-generating unit if the recoverable amount of the unit is less than the carrying amount of the unit. The impairment is allocated to reduce the carrying amount of the cash-generating assets of the unit on a pro rata basis, based on the carrying amount of each asset in the unit. These reductions in carrying amounts are treated as impairment losses on individual assets.

In allocating an impairment loss, the entity does not reduce the carrying amount of an asset below the highest of:

- its fair value less costs to sell (if determinable);
- its value in use (if determinable); and
- zero.

The amount of the impairment loss that would otherwise have been allocated to the asset is allocated pro rata to the other cash-generating assets of the unit.

Where a non-cash-generating asset contributes to a cash-generating unit, a proportion of the carrying amount of that non-cash-generating asset is allocated to the carrying amount of the cash-generating unit prior to estimation of the recoverable amount of the cash-generating unit.

## Reversal of impairment loss

The entity assess at each reporting date whether there is any indication that an impairment loss recognised in prior periods for a cash-generating asset may no longer exist or may have decreased. If any such indication exists, the entity estimates the recoverable amount of that asset.

An impairment loss recognised in prior periods for a cash-generating asset is reversed if there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised. The carrying amount of the asset is increased to its recoverable amount. The increase is a reversal of an impairment loss. The increased carrying amount of an asset attributable to a reversal of an impairment loss does not exceed the carrying amount that would have been determined (net of depreciation or amortisation) had no impairment loss been recognised for the asset in prior periods.

A reversal of an impairment loss for a cash-generating asset is recognised immediately in surplus or deficit.

Any reversal of an impairment loss of a revalued cash-generating asset is treated as a revaluation increase.

After a reversal of an impairment loss is recognised, the depreciation (amortisation) charge for the cash-generating asset is adjusted in future periods to allocate the cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

A reversal of an impairment loss for a cash-generating unit is allocated to the cash-generating assets of the unit pro rata with the carrying amounts of those assets. These increases in carrying amounts are treated as reversals of impairment losses for individual assets. No part of the amount of such a reversal is allocated to a non-cash-generating asset contributing service potential to a cash-generating unit.

In allocating a reversal of an impairment loss for a cash-generating unit, the carrying amount of an asset is not increased above the lower of:

- its recoverable amount (if determinable); and
- the carrying amount that would have been determined (net of amortisation or depreciation) had no impairment loss been recognised for the asset in prior periods.

The amount of the reversal of the impairment loss that would otherwise have been allocated to the asset is allocated pro rata to the other assets of the unit.

## **1.8 Impairment of non-cash-generating assets**

### **Recognition and measurement**

If the recoverable service amount of a non-cash-generating asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable service amount. This reduction is an impairment loss.

An impairment loss is recognised immediately in surplus or deficit.

Any impairment loss of a revalued non-cash-generating asset is treated as a revaluation decrease.

When the amount estimated for an impairment loss is greater than the carrying amount of the non-cash-generating asset to which it relates, the entity recognises a liability only to the extent that is a requirement in the Standards of GRAP.

After the recognition of an impairment loss, the depreciation (amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

### **Reversal of an impairment loss**

The entity assess at each reporting date whether there is any indication that an impairment loss recognised in prior periods for a non-cash-generating asset may no longer exist or may have decreased. If any such indication exists, the entity estimates the recoverable service amount of that asset.

An impairment loss recognised in prior periods for a non-cash-generating asset is reversed if there has been a change in the estimates used to determine the asset's recoverable service amount since the last impairment loss was recognised. The carrying amount of the asset is increased to its recoverable service amount. The increase is a reversal of an impairment loss. The increased carrying amount of an asset attributable to a reversal of an impairment loss does not exceed the carrying amount that would have been determined (net of depreciation or amortisation) had no impairment loss been recognised for the asset in prior periods.

A reversal of an impairment loss for a non-cash-generating asset is recognised immediately in surplus or deficit. Any reversal of an impairment loss of a revalued non-cash-generating asset is treated as a revaluation increase.

After a reversal of an impairment loss is recognised, the depreciation (amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

## **1.9 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.

## **1.10 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, 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.

## 1.11 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.

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 government 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.

## 1.12 Investment income

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

## 1.13 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.

## 1.14 Comparative figures

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

## 1.15 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.

## 1.16 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 (*Act 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.

### **1.17 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 01/04/2015 to 31/03/2016. The budget and the accounting bases 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.

### **1.18 Related parties**

The entity operates in an economic sector currently dominated by entities directly or indirectly owned by the South African government. As a consequence of the constitutional independence of the three spheres of government in South Africa, only entities within the national sphere of government are considered to be related parties.

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.

Only transactions with related parties not at arm's length or not in the ordinary course of business are disclosed.



# Notes to the Annual Financial Statements

Figures in Rand	2016	2015
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## 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 2016 or later periods:

Standard/Interpretation:	Effective Date: Years Beginning on or After	Expected Impact:
• GRAP 20: Related parties	01 April 2017	The impact of the amendment is not material.
• GRAP 32: Service Concession Arrangements: Grantor	01 April 2016	The impact of the amendment is not material.
• GRAP 108: Statutory Receivables	01 April 2016	The impact of the amendment is not material.
• GRAP 17 (as amended 2015): Property, Plant and Equipment	01 April 2016	The impact of the amendment is not material.
• GRAP 21 (as amended 2015): Impairment of non-cash-generating assets	01 April 2017	The impact of the amendment is not material.
• GRAP 26 (as amended 2015): Impairment of cash-generating assets	01 April 2017	The impact of the amendment is not material.
• Directive 12: The Selection of an Appropriate Reporting Framework by Public Entities	01 April 2018	The impact of the amendment is not material.

## 3 Property, plant and equipment

	2016			2015		
	Cost/ Valuation	Accumulated Depreciation and Accumulated Impairment	Carrying Value	Cost/ Valuation	Accumulated Depreciation and Accumulated Impairment	Carrying Value
Furniture and fixtures	1,507,218	(1,294,441)	212,777	1,370,285	(1,076,778)	293,507
Office equipment	347,092	(244,646)	102,446	399,280	(317,610)	81,670
Computer equipment	1,010,352	(641,541)	368,811	501,511	(247,211)	254,300
<b>Total</b>	<b>2,864,662</b>	<b>(2,180,628)</b>	<b>684,034</b>	<b>2,271,076</b>	<b>(1,641,599)</b>	<b>629,477</b>

### Reconciliation of Property, Plant and Equipment - 2015

	Opening Balance	Additions	Transfers	Depreciation	Total
Furniture and fixtures	293,507	-	35,314	(116,044)	212,777
Office equipment	81,670	-	66,598	(45,822)	102,446
Computer equipment	254,300	324,112	6,189	(215,790)	368,811
	<b>629,477</b>	<b>324,112</b>	<b>108,101</b>	<b>(377,656)</b>	<b>684,034</b>

### 3 Property, plant and equipment (continued)

#### Reconciliation of property, plant and equipment - 2015

	Opening Balance	Additions	Disposals	Depreciation	Total
Furniture and fixtures	214,881	264,456	-	(185,830)	293,507
Office equipment	91,915	12,199	(2,049)	(20,395)	81,670
Computer equipment	157,330	148,136	-	(51,166)	254,300
	<b>464,126</b>	<b>424,791</b>	<b>(2,049)</b>	<b>(257,371)</b>	<b>629,477</b>

### 4 Intangible assets

	2016			2015		
	Cost	Accumulated Authorisation and Accumulated Impairment	Carrying Value	Cost	Accumulated Authorisation and Accumulated Impairment	Carrying Value
Computer software, other	410,721	(224,877)	185,844	211,202	(181,019)	30,183

#### Reconciliation of intangible assets - 2016

	Opening Balance	Additions	Authorisation	Total
Computer software, other	30,183	199,519	(43,858)	185,844

#### Reconciliation of intangible assets - 2015

	Opening Balance	Additions	Authorisation	Total
Computer software, other	38,710	9,716	(18,243)	30,183

### 5. Other financial assets

<b>Listed Fund</b>			
Stanlib Income Fund		7,154,587	6,673,776
Investment is measured at the value of the listed investment at reporting date.			
<b>Level 1</b>			
Stanlib Income Fund		7,154,587	6,673,776

#### 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	622,026	416,165
Prepayments	177,592	-
Deposits	175,819	175,819
Provision for impairments	(234,299)	-
	<b>741,138</b>	<b>591,984</b>

### 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.

### 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 but not impaired is as follows:

Current	243,230	350,664
30+ days	65,365	-
60+ days	8,800	241,320
90+ days	800	-
120+ days	657,242	-

### Trade and other receivables impaired

As of 31 March 2016, trade and other receivables of R 234,299 (2015: R -) were impaired and provided for.

The amount of the provision was R 234,299 as of 31 March 2016 (2015: R -).

The ageing of these loans is as follows:

120+ days	234,299	-
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### Reconciliation of provision for impairment of trade and other receivables

Provision for impairment	(234,299)	-
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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	1,160,803	4,472,736
Provision for impairments	(45,380)	-
	<b>1,115,423</b>	<b>4,472,736</b>

### 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.

### 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:

Current	787,645	4,149,412
30+ days	-	323,324
60+ days	-	-
90+ days	-	-
120+ days	373,158	-

### Receivables from non-exchange transactions impaired

As of 31 March 2016, other receivables from non-exchange transactions of R 45,380 (2015: R -) were impaired and provided for.

The amount of the provision was R 45,380 as of 31 March 2016 (2015: R -). The ageing of these loans is as follows:

120+ days	45,380	-
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### Reconciliation of provision for impairment of receivables from non-exchange transactions

Provision for impairment	(45,380)	-
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## 8 Cash and cash equivalents

Cash and cash equivalents consist of:

Bank balances	429,714	989,178
Short-term deposits	7,577,004	4,866,520
	<b>8,006,718</b>	<b>5,855,698</b>

## 9 Unspent conditional grants and receipts

Unspent conditional grants and receipts comprises of:

### Unspent conditional grants and receipts

Department of Science and Technology - Hydraulic Fracturing	313,399	-
Department of Science and Technology - Science Advice Workshop	363,324	-
Department of Science and Technology - Genetics Engineering	149,997	-
Department of Science and Technology - Lindau Nobel Laureate	1,544,817	-
National Research Foundation - Skills Development for Women in Science	136,042	-
University of Auckland - Science Advice Workshop	125,000	-
Campaign for Tobacco Free Kids - Tobacco Free Kids	103,296	-
	<b>2,735,875</b>	<b>-</b>

### Movement during the year

#### Department of Science and Technology - Hydraulic Fracturing

Balance at the beginning of the year	-	-
Additions during the year	450,000	-
Income recognition during the year	(136,601)	-
<b>Balance at end of the year</b>	<b>313,399</b>	<b>-</b>

#### Department of Science and Technology - Science Advice Workshop

Balance at the beginning of the year	-	-
Additions during the year	500,000	-
Income recognition during the year	(136,677)	-
<b>Balance at end of the year</b>	<b>363,324</b>	<b>-</b>

#### Department of Science and Technology - Genetics Engineering

Balance at the beginning of the year	-	-
Additions during the year	200,000	-
Income recognition during the year	(50,003)	-
<b>Balance at end of the year</b>	<b>149,997</b>	<b>-</b>

#### Department of Science and Technology - Lindau Nobel Laureate

Balance at the beginning of the year	-	-
Additions during the year	1,678,000	-
Income recognition during the year	(133,183)	-
<b>Balance at end of the year</b>	<b>1,544,817</b>	<b>-</b>

#### National Research Foundation - Skills Development for Women in Science

Balance at the beginning of the year	-	-
Additions during the year	200,000	-
Income recognition during the year	(63,958)	-
<b>Balance at end of the year</b>	<b>136,042</b>	<b>-</b>

#### University of Auckland - Science Advice Workshop

Balance at the beginning of the year	-	-
Additions during the year	908,763	-
Income recognition during the year	(783,763)	-
<b>Balance at end of the year</b>	<b>125,000</b>	<b>-</b>

#### Campaign for Tobacco Free Kids - Tobacco Free Kids

Balance at the beginning of the year	-	-
Additions during the year	103,296	-
Income recognition during the year	-	-
<b>Balance at end of the year</b>	<b>103,296</b>	<b>-</b>



The nature and extent of government grants recognised in the annual financial statements and an indication of other forms of government assistance from which the entity has directly benefited; and

Unfulfilled conditions and other contingencies attaching to government assistance that has been recognised.

These amounts are invested in a ring-fenced investment until utilised.

## 10 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.

<b>Reconciliation</b>		
Opening balance	-	-
Amounts received during the year	8,345,541	-
Expenditure incurred during the year	(4,412,881)	-
	<b>3,932,660</b>	<b>-</b>

## 11 Payables from exchange transactions

Trade payables	355,328	1,107,922
Income received in advance	-	200,000
Claims and disbursements	44,715	813,507
Unallocated receipts	35,143	4,001
Provision for leave pay	1,107,098	617,809
Accrued expenses	485,431	69,538
	<b>2,027,715</b>	<b>2,812,777</b>

## 12 Revenue

Publication fees	340,645	421,353
Secretarial fees	40,000	34,076
Workshop fees	-	740,071
Membership fees	84,800	90,170
Insurance recoveries	21,127	-
Gains on disposal of an assets	2,600	321
Interest received	877,519	987,176
Government grants & subsidies	25,513,642	32,117,014
Local grants and donations	4,799,982	494,796
Foreign grants and donations	4,585,813	4,852,607
	<b>36,266,128</b>	<b>39,737,584</b>

The amount included in revenue arising from exchanges of goods or services are as follows:

Publication fees	340,645	421,353
Secretarial fees	40,000	34,076
Workshop fees	-	740,071
Membership fees	84,800	90,170
Insurance recoveries	21,127	-
Gains on disposal of an asset	2,600	321
Interest received	877,519	987,176
	<b>1,366,691</b>	<b>2,273,167</b>

The amount included in revenue arising from non-exchange transactions is as follows:

<b>Taxation revenue</b>		
<b>Transfer revenue</b>		
Government grants & subsidies	25,513,642	32,117,014
Local grants and donations	4,799,982	494,796
Foreign grants and donations	4,585,813	4,852,607
	<b>34,899,437</b>	<b>37,464,417</b>

### 13 Government grants and subsidies

<b>Operating grants</b>		
Department of Science and Technology - Baseline	22,991,000	24,596,693
Department of Science and Technology - Contract funding	594,463	3,088,403
Department of Higher Education and Training	1,268,221	3,593,202
South African Agency for Science and Technology Advancement	-	11,406
National Research Foundation	563,958	100,000
Agricultural Research Council	96,000	630,000
South African National Energy Development Institute	-	97,310
	<b>25,513,642</b>	<b>32,117,014</b>

### 14 Employee-related costs

Basic	14,685,020	11,419,839
Bonus	-	983,857
Medical aid	167,715	176,369
Unemployment Insurance Fund	117,628	99,023
Workers Compensation Assistance	47,005	-
Skills Development Levy	152,507	115,920
Defined contribution plans	2,222,674	1,507,528
Other	-	17,106
	<b>17,392,549</b>	<b>14,319,642</b>

### 15 General expenses

Accounting fees	51,300	-
Advertising	-	15,595
Auditors remuneration	288,990	326,336
Bank charges	67,024	51,083
Cleaning	3,840	5,003
Computer expenses	51,956	20,797
Consulting and professional fees	798,533	507,388
Consumables	11,748	29,573
Entertainment	-	40,042
Gifts	20,395	37,620
Insurance	76,420	79,350
Conferences and seminars	187,399	145,909
IT expenses	484,211	594,531
Marketing	3,825	-
Horticulture	-	7,000
Magazines, books and periodicals	61,956	5,165

Placement fees	-	47,698
Postage and courier	29,563	26,490
Printing and stationery	193,303	164,982
Research and development costs	528,000	480,000
Security (Guarding of municipal property)	8,502	27,411
Software expenses	2,714	4,000
Staff welfare	80	-
Subscriptions and membership fees	1,824	1,755
Telephone and fax	147,440	130,115
Training	3,440	50,160
Travel - overseas	677,236	902,120
Project Expenditure	19,209,602	16,320,873
Office expenses	33,395	21,607
Casual workers	41,434	6,825
Layout and design	2,250	23,907
Catering and refreshments	41,069	29,345
Storage	9,160	13,880
	<b>23,036,609</b>	<b>20,116,560</b>

## 16. Fair value adjustments

Other financial assets

• Fair value adjustments - investment	<b>18,776</b>	<b>(84,910)</b>
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## 17 Auditors' remuneration

Fees	<b>288,990</b>	<b>326,336</b>
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## 18 Lease Rentals on Operating Leases

<b>Premises</b>		
Premises	1,375,377	1,163,371

## 19 Cash generated from (used in) operations

(Deficit) surplus	(6,249,583)	3,695,288
<b>Adjustments for:</b>		
Depreciation and amortisation	421,514	322,358
Fair value adjustments	(18,776)	84,910
Debt impairment	279,679	-
Other non-cash items	(108,101)	-
<b>Changes in working capital:</b>		
Receivables from exchange transactions	(149,154)	323,428
Provision for impairments	(279,679)	-
Receivables from non-exchange transactions	3,357,313	(4,472,736)
Payables from exchange transactions	(785,062)	1,369,582
Unspent conditional grants and receipts	2,735,875	(3,889,473)
ICSU ROA	3,932,660	-
	<b>3,136,686</b>	<b>(2,566,643)</b>

## 20 Commitments

This committed expenditure relates to office rent and parking bays.

### Operating leases – as lessee (expense)

Minimum lease payments due - within one year	288,796	281,956
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Operating lease payments represent rentals payable by the entity for office rent and parking bays. Lease duration is from July to June annually and rentals are fixed for the duration of the lease. No contingent rent is payable.

## 21 Related parties

### Relationships

Controlling Entity	Department of Science and Technology
Group Entities	Agency for Science and Technology Advancement Council for Scientific and Industrial Research Human Science Research Council National Advisory Council on Innovation National Research Foundation South African National Space Authority Technology Innovation Agency
ASSAf Council members	Prof B D Reddy Prof M I Parker Prof H Soodyall Prof S D Maharaj Dr R M Adam Prof A C Bawa Prof H Coovadia Prof B Wingfield Prof J Mouton Prof S Burton Dr S Moephuli Prof Z Vilakazi Prof N Duncan
Members of key management	Prof R Diab Dr X Mati Mr M Chiloane Mrs L du Plessis Ms P Scholtz Mr S Maphosa Mrs S Veldsman

### Related party balances

#### Unspent conditional grants

Department of Science and Technology	2,371,537	83,517
National Research Foundation	136,042	-

### Related party transactions

#### Grants received

Department of Science and Technology	23,585,463	27,777,858
National Research Foundation	563,958	100,000

## Expenditure incurred

Council for Scientific and Industrial Research	132,800	207,533
Prof J Mouton	100,000	150,000

## Remuneration of management executive management

### 2016

	Basic Salary	Cellphone Allowance	Total
<b>Name</b>			
Prof R Diab - Executive Officer	1,742,232	9,000	1,751,232
Dr X Mati - Manager Governance & National Liaison	880,288	9,000	889,288
Mr M Chiloane - Financial Manager	1,250,005	6,000	1,256,005
Mrs L du Plessis - Manager Human Resource	757,570	6,000	763,570
Ms P Scholtz - Manager Communications	805,135	6,000	811,135
Mr S Maphosa - Manager International Liaison	792,076	6,000	798,076
Mrs S Veldsman - Manager Scholarly Publishing	782,208	6,000	788,208
	<b>7,009,514</b>	<b>48,000</b>	<b>7,057,514</b>

### 2015

	Basic Salary	Bonuses and Performance-related Payments	Cellphone Allowance	Total
<b>Name</b>				
Prof R Diab - Executive Officer	949,661	79,138	9,000	1,037,799
Dr X Mati - Manager Governance & National Liaison	879,121	73,260	9,000	961,381
Mr M Chiloane - Financial Manager	893,980	74,498	6,000	974,478
Mrs L du Plessis - Manager Human Resource	170,000	18,889	1,500	190,389
Mrs P Scholtz - Manager Communications	677,138	56,428	6,000	739,566
Mr S Maphosa - Manager International Liaison	56,834	5,486	500	62,820
Mrs S Veldsman - Manager Scholarly Publishing	715,039	59,587	6,000	780,626
	<b>4,341,773</b>	<b>367,286</b>	<b>38,000</b>	<b>4,747,059</b>

## 22 Members' emoluments

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

## 23 Prior period error

During 2016, the entity discovered that revenue from non-exchange transactions amounting to R1,749,925 was omitted in 2015, which should have been included in 2015.

The entity's accounting records for 2015 should have shown grants received amounting to R1,749,925 and receivable from non exchange transactions amounting to R1,749,925.

The financial statements has been restated as follows:

## Statement of financial position

Receivables from non-exchange transactions	-	1,749,925
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## Statement of financial performance

Grants received	-	1,749,925
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### 24 Comparative figures

Comparative figures have been restated to facilitate correct disclosure. Refer to note 23.

### 25 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. Sales to retail customers are settled in cash or using major credit cards. Credit guarantee insurance is purchased when deemed appropriate.

##### Market risk

##### Foreign exchange risk

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

The entity does not hedge foreign exchange fluctuations.

### 26 Going concern

The annual financial statements have been prepared on a 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.

### 27 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 27 July 2016, as the audit opinion was provided on those annual financial statements

## 28 Fruitless and wasteful expenditure

Fruitless and wasteful expenditure	136,601	-
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The entity fruitless expenditure incurred relates to a payment that was made to secure a venue for the launch of a report on hydraulic fracturing. The launch was dependent on the approval of the report by the interested stakeholders. There were some challenges with regard to the approval of the report which were beyond the entity's control and the launching couldn't materialise.

Unfortunately, the deadline for cancellation had passed and the conference venue imposed a penalty and no official was being held liable for the expense.

## 29 Irregular expenditure

### Details of irregular expenditure

The Academy has not complied with the requirements of Section 51(1)(a)(iii) of the Public Finance Management (Act 1 of 1999), National Treasury Practice Notes and the Preferential Procurement Policy Framework (Act 5 of 2000) for the first seven months of the fiscal year, however it has complied with the last five months of the fiscal year. The non-compliance has resulted in various instances of irregular expenditure being incurred.

The entity is currently undertaking a process to engage the National Treasury to determine an action plan of compliance and the impact and consequences if any of the non-compliance noted above.

## 30 Budget differences

### Differences between budget and actual amounts basis of preparation and presentation

The budget and accounting bases 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.

A reconciliation between the actual amounts on a comparable basis as presented in the statement of comparison of budget and actual amounts and the actual amounts in the cash flow statement for the period ended 31 March 2016 is presented below. The financial statements and budget documents are prepared for the same period. There is a basis difference: the budget is prepared on a cash basis and the financial statements on the accrual basis.

### 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 2015 to 31 March 2016.

The variance on the budget was as a result of the following;

30.1 Publication fees. Unfavourable variance of 32%. This was as a result of revenue loss from subscription fees on the *South African Journal of Science* after it was decided to publish it online for free as well as customers who failed to honour their debt after placing their adverts in the *Quest* magazine.

30.2 Secretarial fees. Favourable variance of 100%. This is revenue for the secretarial services that is provided to COHORT.

30.3 Insurance recoveries. Favourable variance of 100%. This was proceeds from insurance claim after a laptop and an IPAD were stolen.

30.4 Interest received. Favourable variance of 60%. This was as a result of interest capitalisation as well as increase in cash and cash equivalent.

30.5 Gains on disposal of assets. Favourable variance of 100%. This accounts for revenue that was received from the disposal of obsolete assets that had been fully impaired and scrapped.

30.6 Local grants and donations. Favourable variance of almost 1900%. This emanated from funding that was not anticipated at the beginning for new projects as well as transfers ring-fenced for the ICSU ROA as a result of being hosted by ASSAf.

30.7 Foreign grants and donations. Unfavourable variance of approximately 9%. This was as a result of anticipated funding from the European Union for the LAMAP project which did not materialise.

30.8 Personnel costs. Unfavourable variance of approximately 1.3%. This emanated from a benchmarking exercise which culminated in salaries for certain staff and management being adjusted.

30.9 Lease rentals on operating lease. Unfavourable variance of approximately 11%. This is as a result of the lease agreement renewal during the year.

30.10 Repairs and maintenance. Unfavourable variance of approximately 123%. This was as a result of unforeseen office repairs and maintenance costs that had to be undertaken.

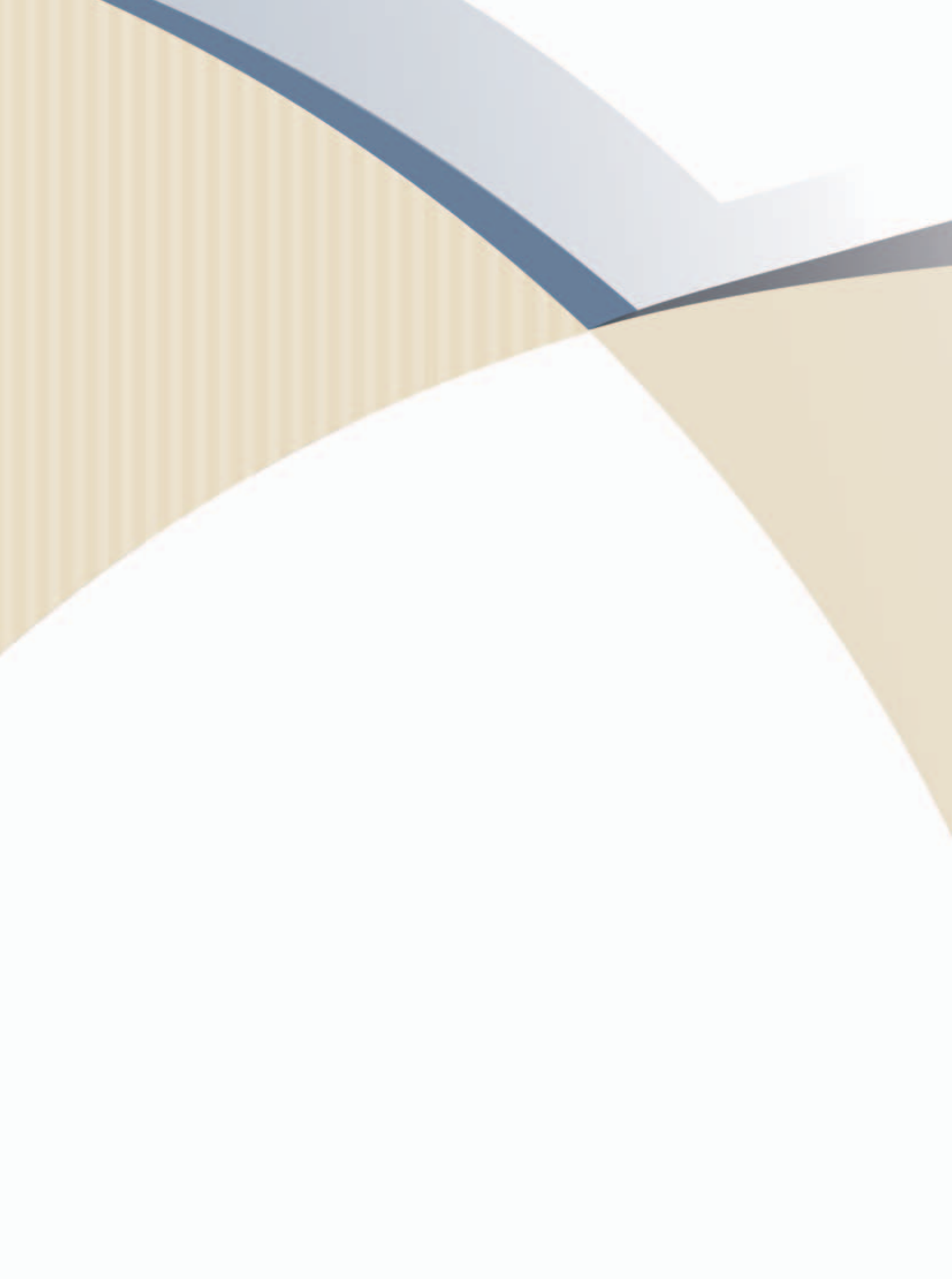
30.11 General expenses. Unfavourable variance of approximately 50%. This was as a result of:

30.11.1 The hosting of the international InterAcademy Panel Conference which ASSAf had committed itself to hosting in anticipation that external funding will be sourced externally but it never materialised. Expenditure incurred amounted to approximately R1,7 million and funding received amounted to approximately R600,000,

30.11.2 Foreign currency fluctuations as a result of an internationally outsourced online publication of the *South African Journal of Science* through ScholarOne and ProQuest,

30.11.3 Hosting of ICSU ROA which necessitated internet connectivity. This necessitated the upgrading of the server at a cost of approximately R330,000 and project expenses amounting R4,4412,881 as well as

30.11.4 Undertaking of necessary projects that were unable to source external funding.



# Annexure A:

## ASSAf Member Biographies

**Quarraisha Abdool Karim** is Professor in Clinical Epidemiology at Columbia University, Associate Scientific Director of CAPRISA and Adjunct Professor in Public Health at the Nelson R Mandela School of Medicine, UKZN.

**Salim S Abdool Karim** is a clinical infectious diseases epidemiologist, Director of CAPRISA, Pro Vice-Chancellor (Research) at UKZN and Professor in Clinical Epidemiology at Columbia University.

**Rob Adam** is the Director of the Square Kilometre Array South Africa Project. He was Group Executive: Nuclear at the Aveng Group and an Extraordinary Professor of Physics at both UP and Unisa.

**Ralph Adendorff** is Professor of Linguistics in the Department of English Language and Linguistics at RU.

**Jimi Adesina** is Professor and DST/NRF Research Chair at the College of Graduate Studies, Unisa.

**Miriam Adhikari** is an Emeritus Professor in the College of Health Sciences at the Nelson Mandela School of Medicine at UKZN.

**Jill Adler** holds the SARChI-First Rand Foundation Mathematics Education Chair at Wits.

**Anthony Jide Afolayan** is a Research Professor and Leader of the Medicinal Plants and Economic Development Research Centre. He is also the Director of the Central Analytical Laboratory at UFH.

**Mark Alexander** is Emeritus Professor of Civil Engineering at UCT, and Previous Director of the Concrete Materials and Structural Integrity Research Unit.

**Peter Alexander** is Professor of Sociology and NRF SARChI Chair in Social Change at UJ.

**Marco Andreoli** is a private consultant in radioactive raw materials and Specialist Scientist at Necsa (formerly the Atomic Energy Board), which he joined in 1982 until retirement in 2011.

**Harold Annegarn** is an Adjunct Professor in the Energy Institute, CPUT.

**Christopher Charles Appleton** is an Emeritus Professor of Parasitology in the School of Life Sciences at UKZN.

**Reinhard Richard Arndt** was one of the founders of the Rand Afrikaans University and Head of the Chemistry Department for 12 years.

**Lewis David Ashwal** is Professor of Petrology, Mineralogy and Geochemistry at the Wits School of Geosciences.

**Lucinda Backwell** is a Senior Researcher in the Bernard Price Institute for Palaeontological Research in the School of Geosciences at Wits.

**Saleem Badat** is Programme Director of International Higher Education and Strategic Projects at the Andrew W Mellon Foundation.

**Himansu Baijnath** is an Honorary Research Professor in the School of Life Sciences at UKZN.

**Narend Baijnath** is the CEO of the Council on Higher Education.

**Priscilla Baker** is Professor in Analytical Electrochemistry in the Department of Chemistry, UWC.

**Yunus Ballim** is the Vice-Chancellor of Sol Plaatje University and currently holds a personal professorship in Civil Engineering at Wits University.

**Marion Bamford** is Professor of Palaeobotany in the Evolutionary Studies Institute, Wits.



**Jacek Banasiak** is a DST/NRF SARCHI Chair in Mathematical Models and Methods in Biosciences and Bio-engineering at UP.

**Eric Bateman** is Emeritus Professor of Medicine, UCT and Founder and former Director of the UCT Lung Institute.

**Ahmed Bawa** was Vice-Chancellor and Principal of DUT.

**Solomon Benatar** is Emeritus Professor of Medicine, UCT, past founding Director of UCT's Bioethics Centre and Adjunct Professor Dalla Lana School of Public Health, University of Toronto.

**Nigel Charles Bennett** occupies the DST/NRF Research Chair in the field of Mammalian Behavioural Ecology and Physiology and the UP Austin Roberts Chair of African Mammalogy.

**Lee Berger** is Research Professor in Human Evolution and the Public Understanding of Science at Wits and Explorer in Residence at the National Geographic Society.

**G Michael Berger** was Associate Professor and Head of Chemical Pathology at the Red Cross Children's Hospital and Professor and Head of Chemical Pathology at the University of Natal Medical School.

**Ann Bernstein** heads the Centre for Development and Enterprise, South Africa.

**Arvin Bhana** is a Chief Specialist Scientist in the Health Systems Research Unit at the MRC and an Honorary Associate Professor in Psychology at UKZN.

**Krish Bharuth-Ram** was the Head of NACI.

**Ramesh Bharuthram** was Deputy Vice-Chancellor (Academic) at UWC.

**Nicholas Biekpe** is Professor of Development Finance and Econometrics at UCT's Business School and the President of the Africagrowth Institute.

**William (Bill) Bishai** was Professor of Medicine in the Department of Medicine, Division of Infectious Diseases at UKZN.

**Judith Bishop** is Director of Computer Science in Microsoft Research, based in Redmond, USA.

**Nigel Tempest Bishop** is Professor of Applied Mathematics at RU.

**Gregory L Blatch** is Professor and Dean of the College of Health and Biomedicine, Victoria University, Melbourne, and Visiting Professor at RU.

**David Block** is a Professor of Applied Mathematics and Astronomy at Wits.

**Alfred Botha** is a Professor of Microbiology at SU.

**Liesbeth Botha** is Partner/Director at PricewaterhouseCoopers South Africa.

**Rudie Botha** is Emeritus Professor of General Linguistics at SU and Honorary Professor of Linguistics at Utrecht University in the Netherlands.

**Thomas Hamilton Bothwell** is Emeritus Professor of Medicine and an Honorary Professorial Research Fellow at Wits.

**Markus Böttcher** is Professor and NRF SARCHI Chair of Astrophysics and Space Physics at NWU, Potchefstroom.

**Paul Bowen** is Professor and former Head of the Department of Construction Economics and Management at UCT.

**Charles Kimberlin Brain** was Director of the Transvaal Museum in Pretoria and is currently Curator Emeritus at the museum.

**George Branch** is Emeritus Professor of Biological Sciences and the Marine Biology Research Centre, UCT.

**Chris Brink** is Vice-Chancellor of Newcastle University, UK.

**Paul Andries Brink** is Professor and Chairman of the Research Committee, Department of Internal Medicine at SU.

**Duncan Brown** is Dean of the Arts Faculty at UWC.

**James Bull** is Emeritus Professor of Organic Chemistry at UCT.

**Renier Adriaan Burger** is Professor of Physics at NWU.

**Stephanie Gail Burton** is Vice-Principal: Research and Postgraduate Education at UP.

**Claude Carignan** is a SKA Research Chair in Extragalactic Multi-Wavelength Astronomy in the Department of Astronomy at UCT.

**Jane Carruthers** is Chair of the Academic Advisory Board of the Rachel Carson Centre at the Ludwig Maximilian University in Munich, and President of the International Consortium of Environmental History Organisations based at Duke University.

**Jennifer Case** is a Professor in the Department of Chemical Engineering at UCT.

**Michael Chapman** is Emeritus Professor and Fellow of UKZN.

**Philip Allan Charles** is Professor of Astronomy in the Department of Physics and Astronomy at the University of Southampton, and a Visiting Professor at the University of Oxford.

**Michael Cherry** is a Professor of Zoology at SU.

**Nithaya Chetty** is Deputy CEO: Astronomy at the NRF and a Professor of Physics at UP.

**Rachel Chikwamba** is Group Executive at the CSIR.

**Anusuya Chinsamy-Turan** is a Palaeobiologist in the Zoology Department at UCT and a previous Vice-President of ASSAf.

**Renfrew Christie** was Dean of Research at UWC in 2014 and has been a Visiting Professor of History at the University of Kentucky in 2015.

**Alan Christoffels** is the DST/NRF Research Chair in Bioinformatics and Health Genomics at UWC.

**Walter T Claassen** was Professor and Vice-Rector for Research at SU.

**Peter Eiddon Cleaton-Jones** is an Emeritus Professor at Wits and an Honorary Professor in the Wits School of Clinical Medicine based in the Steve Biko Centre for Bioethics.

**Thomas Eugene Cloete** is Vice-Rector: Research, Innovation and Postgraduate Studies at SU.

**Maureen Coetzee** holds a SARCHI Chair in Medical Entomology and Vector Control at Wits.

**Theresa Coetzer** holds a DST/NRF SARCHI Chair in Proteolysis in Homeostasis, Health and Disease in the School of Life Sciences, UKZN.

**John Darrell Comins** is Emeritus Research Professor at Wits.

**Neville Raymond Comins** currently consults in the fields of Innovation, National Systems of Innovation, and Science Park Development.

**Simon H Connell** is a Professor of Physics at UJ.

**Ernst Conradie** is Senior Professor in the Department of Religion and Theology at UWC.

**Jacobus Conradie** is the Head of the Accelerator and Engineering Department of iThemba LABS.

**Jeanet Conradie** is Professor in the Department of Chemistry at UFS.

**Hoosen Coovadia** is Emeritus Professor of Paediatrics and Child Health, UKZN. He is Director: Maternal Adolescent and Child Health, Wits and was a Commissioner of the National Planning Commission in the Presidency.

**Anna Coutsooudis** is a public health scientist and is a Professor in the Department of Paediatrics and Child Health, UKZN.

**Don Cowan** is Director of both the Centre for Microbial Ecology and Genomics, and the Genomics Research Institute, at UP.

**Richard Mark Cowling** is a Distinguished Professor in the Botany Department at NMMU.

**Robin Michael Crewe** is the Director of Centre for the Advancement of Scholarship and a member of the Social Insects Research Group at UP. He is a previous President of ASSAf.

**Felix Dapare Dakora** is Professor and holds the South African Research Chair in Agrochemurgy and Plant Symbioses at TUT.

**Peter Dankelmann** is Professor in the Department of Mathematics at UJ.

**Dennis Martin Davis** is a Judge of the Cape High Court and a Competition Appeal Court Judge.

**Christian Rudolph de Beer** is Emeritus Senior Vice-Principal at UP.

**Deon de Beer** is Chief Director: Technology Transfer & Innovation Support, NWU.

**Tilman Dederling** is Professor in History at Unisa.

**John Wesley de Gruchy** is Emeritus Professor of Christian Studies at UCT.

**Cheryl de la Rey** is Vice-Chancellor and Principal and Professor of Psychology at UP.

**Van Zyl de Villiers** is Director in the Department of Safeguards at the International Atomic Energy Agency in Vienna, Austria.

**Wim de Villiers** is Rector and Vice-Chancellor of SU.

**David Dewar** is Emeritus Professor and Senior Research Scholar in the School of Architecture, Planning and Geomatics at UCT.

**Maarten de Wit** is the Chair of Earth Stewardship Science at NMMU.

**Uma Dhupelia-Mesthrie** is Senior Professor in the Department of History at UWC and Deputy Dean (Research and Postgraduate Studies) in the Arts Faculty.

**Roseanne Diab** is the Executive Officer of ASSAf and Emeritus Professor in Environmental Sciences, UKZN.

**Leon Milner Theodore Dicks** is a Distinguished Professor of Microbiology at SU.

**Thulani H Dlamini** is an Executive Manager: Research & Development at Sasol.

**Tania Douglas** is Professor and DST/NRF Research Chair in Biomedical Engineering & Innovation at UCT.

**Kathleen Ann Driver** is Emeritus Professor of Mathematics and former Dean of the Faculty of Science, UCT.

**Themba Dube** is Professor of Mathematics at Unisa.

**John Duncan** is a consultant/researcher in Higher Education.

**Norman TF Duncan** is Professor in Psychology and the Dean of Humanities and Vice-Principal: Academic at UP.

**Jeanetta du Plessis** is Director of the Centre of Excellence for Pharmaceutical Sciences and Professor of Pharmaceutics at NWU.

**Lourens Martinus du Plessis** is an Emeritus Professor and Professor Extraordinary in the Faculty of Law at NWU.

**Willemien du Plessis** is Professor of Law and Director of the Research Unit at the Faculty of Law, NWU.

**James du Preez** is Emeritus Professor/Research Fellow and former Head in the Department of Microbial, Biochemical and Food Biotechnology at UFS.

**Eno Ebenso** is Professor of Physical Chemistry and Executive Dean in the Faculty of Agriculture, Science & Technology at NWU, Mafikeng.

**Anton Eberhard** is a Professor at UCT where he directs the Management Programme in Infrastructure Reform and Regulation at the Graduate School of Business.

**Liesel Ebersöhn** is the Director of the Centre for the Study of Resilience, UP and Professor in the Department of Educational Psychology, Faculty of Education.

**George Adriaan Ekama** is Professor of Water Quality Engineering at UCT.

**William (Fred) Ellery** is Professor of Physical Geography and Head of the Geography Department at RU.

**George Francis Rayner Ellis** is Emeritus Professor of Mathematics at UCT.

**Irma Eloff** is the Dean of Education and Professor of Educational Psychology at UP.

**Jacobus (Kobus) Eloff** was the last Director of the National Botanical Gardens and is Research Professor and founder of the Phytomedicine Programme at Onderstepoort, UP.

**Theuns Eloff** is former Vice-Chancellor of NWU.

**Petra Engelbrecht** is a Research Professor in Education, Canterbury Christ Church University, England.

**Patrick George Eriksson** is Emeritus Head of Department of Geology at UP.

**Theunis Erasmus** was Vice-Rector at UP.

**Sabiha Essack** holds a SARChI Chair in Antibiotic Resistance and One Health and is a Professor in Pharmaceutical Sciences at UKZN.

**Arthur George Every** is an Emeritus Professor of Physics at Wits. He is Editor-in-Chief of the journal *Ultrasonics*.

**Bernard Fanaroff** was the Director of the SKA and from January 2016 is a part-time Strategic Adviser to the project.

**Jill Margaret Farrant** holds a Research Chair (Molecular Physiology of Plant Desiccation Tolerance) in the Department of Molecular and Cell Biology, UCT.

**Michael William Feast** is an Honorary Professor at UCT and a Senior Research Associate at the South African Astronomical Observatory (SAAO).

**Johannes Wolfgang Fedderke** is Director of Economic Research Southern Africa and Professor of Economics and International Affairs at Pennsylvania State University.

**Stephanus Ferreira** is Director of the Centre for Space Research at NWU.

**John Field** is Emeritus Professor and Senior Scholar in the Marine Research Institute and Oceanography Department, UCT.

**Brian Figaji** was Vice-Chancellor of the former Peninsula Technikon.

**Maxim Finkelstein** is Distinguished Professor in the Department of Mathematical Statistics, UFS.

**Rosalie Finlayson** is Emeritus Professor and Research Fellow in the Department of African Languages at Unisa.

**Peter Folb** is Emeritus Professor of Pharmacology at UCT.

**Sharon Fonn** is Professor in the School of Public Health, Wits.

**Thomas (Tony) Ford** is Emeritus Professor of Theoretical Chemistry at UKZN.

**Andrew Forbes** is Distinguished Professor in the School of Physics, Wits.

**Pierre William Froneman** is Professor in the Department of Zoology and Entomology at RU.

**Richard Francis Fuggle** is Emeritus Professor of Environmental Studies at UCT and practises as an environmental consultant.

**Christoph Friedrich Garbers** is a retired Professor of Organic Chemistry and former Chancellor at Unisa.

**Geoff Garrett** is Chief Scientist of Queensland, Australia.

**Jan Geertsema** is Quality Manager of the Faculty of Natural Sciences at NWU after his retirement as Director of Research Support at NWU.

**Wieland Gevers** is Emeritus Professor of Medical Biochemistry at UCT and a previous President, Executive Officer and General Secretary of ASSAf.

**Hendrik Geyer** is Director of the Stellenbosch Institute for Advanced Study.

**Nicolaas Claudius (Nico) Gey van Pittius** is Professor in Molecular Biology and the Deputy Dean: Research of the Faculty of Medicine and Health Sciences, SU.

**David Glasser** is a Professor of Chemical Engineering and a Director of the Material and Process Synthesis research unit at Unisa.

**Irvy (Igle) Gledhill** is a Scientist in Aeronautics in the Defence, Peace, Safety and Security Unit of the CSIR, and a Visiting Adjunct Professor in Mechanical, Industrial and Aeronautical Engineering at Wits.

**Pumla Gobodo-Madikizela** holds the position of Research Chair of Social Change and Transformation at SU.

**Richard Joseph Goldstone** is an Emeritus Justice of the Constitutional Court and former Chief Prosecutor of the United Nations Criminal Tribunals for the former Yugoslavia and Rwanda.

**Amanda Gouws** is Distinguished Professor of Political Science at SU and holds a SARChI Chair in Gender Politics.

**Rob Gous** is Emeritus Professor and Senior Research Fellow at UKZN.

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**Albert van Jaarsveld** is VC at UKZN.

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**Frederik van Niekerk** is DVC: Research, Innovation and Technology at NWU.

**Johannes van Staden** is Emeritus Professor and Director of the Research Centre for Plant Growth and Development, UKZN.

**Stefan Weiss** is Professor of Biochemistry at the School of Molecular and Cell Biology, Wits.

**Brian van Wilgen** is Research Professor in the Centre for Invasion Biology, Department of Botany and Zoology, SU.

**Jacobus Daniel van Wyk** is a retired Professor, United States National Science Foundation Engineering Research Center for Power Electronic Systems, Blacksburg, Virginia, USA.

**Arnold van Zyl** is the Rector of the *Technische Universitaet Chemnitz* in Germany.

**Willem Heber (Emile) van Zyl** is Distinguished Professor in Microbiology and Head of Microbiology Department at SU and holds a SARChI Chair of Energy Research: Bio-fuels.

**Johan van Zyl** is the former Group Chief Executive Officer of Sanlam Limited.

**Daniel Verwoerd** is Research Coordinator of the Faculty of Veterinary Science at UP.

**Zebulon Zenzele Vilakazi** is DVC: Research and Postgraduate Affairs at Wits and Extraordinary Professor at UP.

**Karel (Fanus) Viljoen** is Professor in the Department of Geology at UJ and holds a SARChI Chair in GeoMetallurgy at the same university.

**Louise Viljoen** is Professor in the Department of Afrikaans and Dutch at SU.

**Sibusiso Vil-Nkomo** is Professor and Executive Director: Institutional Advancement at UP and a previous Treasurer of ASSAf.

**Daniel Visser** is DVC: Research and Internationalisation at UCT and a Professor of Law.

**Renuka Vithal** is DVC for Teaching and Learning at UKZN.

**Wilma Viviers** is Professor in International Trade, Director of the TRADE (Trade and Development) focus area at the NWU and World Trade Organisation Chair holder.

**James Andrew (Jimmy) Volmink** is Dean and Professor of Community Health in the Faculty of Medicine and Health Sciences at SU.

**Gerhard von Gruenewaldt** is retired Vice-President of the NRF and a private consultant in the areas of Science Policy, Evaluations and Research Infrastructure.

**Hester (Esté) Vorster** is a Research Professor in Nutrition at the NWU and a previous General Secretary of ASSAf.

**Lyn Wadley** is an Honorary Professor of Archaeology in the Evolutionary Studies Institute, Wits.

**Yusuf Waghid** is Distinguished Professor of Philosophy of Education at SU.

**Anthony David Mortimer Walker** is Emeritus Professor and Honorary Research Associate in Physics at UKZN.

**Melanie Walker** is the SARChI Chair in Higher Education and Development and Distinguished Professor at UFS.

**Brian Warner** is Distinguished Emeritus Professor of Natural Philosophy and a senior scholar at UCT.

**Herman Wasserman** is Professor of Media Studies and Director of the Centre for Film and Media Studies, UCT.

**Vanessa Jane Watson** is Professor in the School of Architecture, Planning and Geomatics at UCT.

**Paula Watt** is Professor in Biology at the School of Life Sciences, UKZN.

**Alan Weinberg** is Emeritus Professor of English at Unisa and contracted to the Research Department of Unisa.

**Mark Charles Wentzel** is Professor with the Water Research Group in the Department of Civil Engineering at UCT.

**Patricia Ann Whitelock** is an Astronomer with the SAAO and Adjunct Professor at UCT.

**Alan Whiteside** holds the Chair in Global Health Policy at the Balsillie School of International Affairs, Wilfrid Laurier University in Waterloo, Canada and an Emeritus Professor of UKZN.

**Anna-Lise Williamson** is Professor in the Division of Medical Virology in the Department of Clinical Laboratory Sciences at UCT.

**Carolyn Williamson** is Professor and Head of the Division of Medical Virology at UCT.

**Francis Wilson** is Emeritus Professor in Economics at UCT.

**Brenda Wingfield** is Deputy Dean of Natural and Agricultural Sciences and Professor of Genetics at UP.

**Michael Wingfield** is Professor and Director of the Forestry and Agricultural Biotechnology Institute at UP.

**Marié Phillipina Wissing** is Professor in Psychology and Researcher in the African Unit for Transdisciplinary Health Research at NWU.

**Charles Shey Wiysonge** is Professor of Community Health and Deputy Director of the Centre for Evidence-based Health Care, Faculty of Medicine and Health Sciences, SU, and Chief Specialist Scientist at the MRC.

**David Randle Woods** was Vice-Chancellor of RU and DVC: Research at UCT.

**Laurence Stuart Wright** is Senior Research Fellow at NWU.

**Xiaohua Xia** is a Professor, Exxaro Energy Efficiency Chair, and Director of the South African Postgraduate Programme in Energy Efficiency and Demand Side Management at UP.

**Hong-Kun Xu** is Chair Professor and Dean of the College of Science at the National Sun Yat-sen University, Kaohsiung, Taiwan.

**Derek Yach** is Executive Director at The Vitality Institute and Senior Vice-President, The Vitality Group (subsidiary of Discovery Holdings).

**Heather Zar** is Professor and Head of the Department of Paediatrics and Child Health, Director of the School of Child and Adolescent Health and Director of the MRC unit on Child & Adolescent Health at UCT.

**Alphose Zingoni** is Professor of Structural Engineering and Head of the Department of Civil Engineering at UCT.

### **Foreign Associates**

**Sydney Brenner** is a two-time recipient of the Canada Gairdner International Award and the 2002 Nobel Prize Laureate in Physiology or Medicine. He has been widely recognised as one of the key contributors to the understanding of modern molecular biology, programmed cell death (apoptosis), and the role of genes in organ development. He has been instrumental not only in shaping the understanding of modern molecular genetics and cell biology but his research using *C. elegans* has been fundamental to its adoption as a model organism worldwide. He was proleptic Director of the MRC Laboratory where he later set up a Unit of Molecular Genetics based in the Department of Medicine. He founded the Molecular Sciences Institute in California, USA. He retired from the Institute in 2000 and in 2001 was appointed a Distinguished Professor in the Salk Institute for Biological Studies.

**Mohamed Hassan** is the Past-President of AAS and NASAC and current Co-Chair of the IAP. He was a Professor and Dean in the School of Mathematical Sciences, Khartoum University, Sudan and he served as the Executive Director of TWAS. He is a Fellow of TWAS, the AAS and the Islamic World Academy of Sciences. He championed the founding of the AAS and NASAC and in particular, he assisted ASSAf in its infancy phase by ensuring that it reaped the benefits from capacity building grants, which saw ASSAf playing a crucial role in issues such as water, science education, biosecurity and scientific writing in Africa.



# Annexure B:

## SAYAS Member Biographies

**Esther Akinlabi** is a Professor and the Head of Department, Department of Mechanical Engineering Science, UJ.

**John Ele-Ojo Ataguba** is a Senior Lecturer in the Health Economics Unit, UCT.

**David Biltchz** is a Professor of Fundamental Rights and Constitutional Law at Unisa and Director of the South African Institute for Advanced Constitutional, Public, Human Rights and International Law.

**Alex Broadbent** specialises in philosophy and is Executive Dean of the Faculty of Humanities at UJ.

**Mpfariseni Budeli** specialises in law and is a Professor at Unisa.

**Tiri Chinyoka** is a Lecturer in the Department of Mathematics and Applied Mathematics at UCT.

**Shadreck Chirikure** specialises in archaeology – Iron Age, Heritage Studies, Archaeometallurgy and is Associate Professor in the Department of Archaeology at UCT.

**Yahya Choonara** specialises in pharmaceuticals and is an Associate Professor at Wits.

**Karen Cloete** is a Postdoctoral Researcher at the iThemba Laboratory for Accelerator-based Sciences at the NRF.

**Mokhotjwa (Simon) Dhlamini** is an Associate Professor in the Department of Physics at Unisa.

**Anél du Plessis** is Professor of Law at NWU.

**Lisa Claire du Toit** is a Senior Lecturer of Pharmaceutical Chemistry in the Department of Pharmacy and Pharmacology, Wits.

**Andrea Fuller** is Director of the Brain Function Research Group and a Professor in the School of Physiology at Wits.

**Avinash Govindjee** is Professor of Law and Head of the Department of Public Law at NMMU.

**Marieka Gryzenhout** specialises in taxonomic studies of the *cryphonectriaceae* and is a Senior Lecturer at UFS.

**Vishnu Jejjala** is the NRF/DST Research Chair in Theoretical Particle Cosmology at Wits.

**Louis Kotzé** is Professor of Law at NWU.

**Genevieve Langdon** is a Professor in the Department of Mechanical Engineering at UCT.

**Aliza le Roux** is a Senior Lecturer and Subject Head at the Department of Zoology and Entomology at the UFS's QwaQwa campus.

**Christine Lochner** is an Associate Professor and Co-Director of the SU/UCT MRC Unit on Anxiety and Stress Disorders at SU.

**Makondelele Makatu** is a Senior Lecturer in the Department of Psychology at UNIVEN.

**Regina Maphanga** is an Associate Professor at the Materials Modelling Centre, UL.

**Mandisa Mbali** is a Lecturer in the Department of Sociology and Social Anthropology at SU.



**Lyndy McGaw** is an Associate Professor at UP and is Leader of the Phytomedicine Programme.

**Andrew McKechnie** is a Professor in the Department of Zoology and Entomology at UP.

**Penny Moore** is a Reader/Associate Professor at the National Institute for Communicable Diseases, Wits and CAPRISA.

**Matseliso Mokhele** is a Research Associate Professor in the Faculty of Education at UFH.

**Patience Mthunzi** is a Senior Scientist at the National Laser Centre of the CSIR.

**Voster Muchenje** is a Research Professor and Co-holder of the DST/NRF SARCHI in Meat Science and is based at UFH.

**Mmboniseni Mulaudzi** is a Professor in the Department of Decision Sciences at Unisa.

**Jeff Murugan** is an Associate Professor of Mathematical Physics in the Department of Mathematics and Applied Mathematics at UCT.

**Bronwyn Myers** is an Associate Professor and a Specialist Scientist in the Alcohol and Drug Abuse Research Unit of the MRC.

**Sershen Naidoo** is a Lecturer in Plant Ecophysiology and Head of the Plant Ecophysiology Research Group at UKZN.

**Fulufhelo Nelwamondo** is a Visiting Professor of Electrical Engineering at UJ and Executive Director: CSIR Modelling and Digital Science Unit.

**Nosiphiwe Ngwala** is a Lecturer in the Faculty of Pharmacy at RU.

**Thobela Nkukwana** is a Researcher in Poultry Nutrition at the ARC.

**Tolu Oni** is a Senior Research Medical Officer within the Clinical Infectious Disease Research Initiative and the Centre for Infectious Disease Epidemiology Research at UCT.

**Tiaan Oosthuizen** is Senior Lecturer and Head of the Rapid Product Development laboratory at SU.

**Marlien Pieters** is a Professor in the Centre of Excellence for Nutrition, NWU.

**Marnie Potgieter** is a Research Fellow in the Department of Physiology at UP.

**Kanshukam Rajaratnam** is an Associate Professor of Finance at the Department of Finance and Tax at UCT.

**Natasha Ross** is a Lecturer at the Department of Chemistry at UWC.

**Srila Roy** is a Senior Lecturer in Sociology at Wits.

**Mathieu Rouget** is a Professor at UKZN and holder of the SARCHI Chair in Land Use Planning and Management.

**Amos Saurombe** is a Professor of Law and Head of Graduate Studies at Unisa.

**Alta Schutte** is MRC Unit Director for the Unit on Cardiovascular Disease and Hypertension; and the SARCHI Chair in the Early Detection and Prevention of Cardiovascular Disease in South Africa based at NWU.

**Jerome Amir Singh** is Head of Ethics and Law at CAPRISA, UKZN.

**Bernard Slippers** is a Professor of Genetics in the Forestry and Agricultural Biotechnology Institute at UP.

**Erick Strauss** is a Professor in the Department of Biochemistry at SU.

**Aldo Stroebe** is Executive Director International Relations and Cooperation at the NRF and Visiting Fellow at the Institute for African Development, Cornell University, USA.

**De Wet Swanepoel** is a Professor in the Department of Speech Language Pathology and Audiology, UP.

**John Terblanche** is an Associate Professor in the Department of Conservation Ecology and Entomology at SU.

**Christina Thobakgale** is a Senior Lecturer and Researcher at the HIV Pathogenesis Programme at UKZN.

**Mpho Tshitangoni** is Director, Land Remediation at the National Department of Environmental Affairs.

**Ernst van der Wal** is a Lecturer in Visual Studies at the Visual Arts Department of SU.

**Joanna Vearey** is an Associate Professor at the African Centre for Migration and Society, Wits.

**Marietjie Venter** is Professor, Zoonosis Research Unit, Medical Virology, UP and Director of the Emerging and Zoonotic Disease Programme for the Regional Global Disease Detection Centre at CDC South Africa.

**Amanda Weltman** is a Senior Lecturer in the Department of Mathematics and Applied Mathematics at UCT.

**Caradee Wright** is a Specialist Scientist in the Environment & Health Research Unit at the MRC and an Extraordinary Lecturer in the Department of Geography, Geoinformatics and Meteorology at UP.

**Sahal Yacoob** is a Lecturer in the Department of Physics at UCT.

# Annexure C:

## SAAE Member Biographies

**Christiaan Aldrich** is Professor at Curtin University, Perth, Australia.

**Mark Alexander** is Emeritus Professor in the Department of Civil Engineering at UCT, and Senior Research Scholar in the Faculty of Engineering and the Built Environment.

**Nazir Alli** is CEO of the South African National Roads Agency Ltd.

**Salim Amod** is the founder and Managing Director of Squinch Advisory Services.

**Francois Anderson** is Chief Radar and EW System Engineer at the CSIR unit for Defence Peace Safety and Security and a CSIR Fellow.

**Hans Auret** is retired Managing Director of ClaassenAuret Inc Consulting Engineers.

**Ricardo Badiali** is a mechanical consulting engineer and owner and Director of RB Engineering.

**Yunus Ballim** is Vice-Chancellor of Sol Plaatje University and Professor in the School of Civil and Environmental Engineering at Wits.

**Trevor Balzer** is Deputy Director-General: Department of Water and Sanitation.

**Robert Barbour** is retired Executive Chairman of Mozal.

**Nic Barcza** is retired Director Oriel Resources Ltd and Executive Consultant to Mintek.

**Danie Barnard** is retired Chief Engineer Infrastructure, Transnet Freight Rail.

**James Barnard** is Global Practice and Technology Leader with Black & Veatch in Kansas City, USA.

**Willem Barnard** is Executive Chairman of VASTech (Pty) Ltd and Extraordinary Professor at SU.

**Gerrit Basson** is Professor in the Department of Civil Engineering, SU.

**Thinus Basson** is retired Executive Director of BKS and Senior Advisor at Hatch.

**Coen Bester** is Founder CEO of BrainWorks Management (Pty) Ltd.

**Ed Bojé** is Professor and Head of Department of Electrical Engineering, UCT.

**Tony Boniface** is retired Director and now consultant to Gibb.

**Johan Bosman** is Director of Sciendum Academy (Pty) Ltd.

**David Botha** is retired Executive Director of the South African Institution of Civil Engineering (SAICE) and Ward Councillor Overstrand Municipality.

**Liesbeth Botha** is Partner/Director at PricewaterhouseCoopers South Africa.

**Pieter Bredell** is an independent nuclear consultant.

**David Brink** is retired Chairman of Murray & Roberts Holdings Limited.

**Andries Burger** is Professor and Departmental Chairman, Process Engineering, SU.

**Colin Carter** is retired Director of Ninham Shand Consulting Engineers.

**Malose Chaba** is Chief Operating Officer: Aggregates and Readymix of AfriSam.

**Peter Clogg** is retired CEO of Group Five.

**Vernon Collis** is a professional structural engineer and architect and a Director of Collis & Associates.

**Pieter Cox** is retired Chief Executive and Chairman, Sasol Limited.

**Ian Craig** is Professor and Group Head of the Department of Electrical, Electronic and Computer Engineering, UP.

**Frank Crowley** is retired Managing Director of Grinaker-LTA Ltd.

**John Cruise** is retired consulting mining engineer and an Honorary Adjunct Professor in the School of Mining Engineering at Wits.

**Jan de Beer** is retired CEO of Eskom Enterprises, now consultant in power generation.

**Bram de Klerk** is Group Executive of Sasol Limited.

**Antonie de Klerk** is retired Executive Director and Professor, UP.

**Giel de Lange** is retired Managing Director at IST Nuclear Power Systems.

**Louis de Waal** is retired Chairman of HHO Africa and Past-President of SAICE, now Chairman of NGO Bicycling Empowerment Network.

**Marius de Waal** is retired Chairman of IDC, Iscor, Transnet and Siemens.

**Pieter de Waal** is retired Manager Technology of Billiton Aluminium Ltd and Executive Director at Blue Cube Systems (Pty) Ltd.

**Tania Douglas** is Professor of Biomedical Engineering and a SARChI Chair in Biomedical Engineering & Innovation, UCT.

**Johann du Plessis** is retired Managing Director of BKS (Pty) Ltd.

**Willem du Preez** is retired Programme Manager: Fuel Manufacturing Industrialisation at PBMR (Pty) Ltd.

**Madeleine du Toit** is Professor in the Department of Mechanical, Materials and Mechatronic Engineering at the University of Wollongong, Australia.

**George Ekama** is Professor of Water Quality Engineering in the Department of Civil Engineering, UCT.

**Con Fauconnier** is retired Chief Executive Officer of Exxaro Resources Ltd.

**Brian Figaji** is retired Vice-Chancellor of the Peninsula Technikon and now a Director of companies.

**Jack Fletcher** is Professor of Chemical Engineering, UCT.

**Walter Focke** is Director, Institute of Applied Materials, Faculty of Engineering, UP.

**Robert Fröhling** is Principal Engineer, Mechanical Technology at Transnet Freight Rail.

**Musa Furumele** is Chief Executive of Gandlati Strategic Equity (Pty) Ltd.

**Andrie Garbers-Craig** is Professor, Anglo American Chair in Pyrometallurgy and Head: Centre for Pyrometallurgy, Department of Materials Science & Metallurgical Engineering, UP.

**Ferdie Geyer** is retired Chairman of G H Marais & Partners.

**David Glasser** is at Unisa's College of Science, Engineering and Technology and an Honorary Professor at Wits.

**Trueman Goba** is Chairman of Hatch Africa (Pty) Ltd, responsible for Africa, Europe and the Middle East.

**John Gregg** is retired Chairman of Gibb Africa.

**Sybrand Grobbelaar** is retired CEO of Grintek Limited.

**Louis Grobler** is Dean of the Faculty of Engineering, NWU.

**Sue Harrison** holds a SARChI Chair in Bioprocess Engineering, is the Director of CeBER and Deputy Dean of Engineering and the Built Environment, UCT.

**Ralph Havenstein** is the former Chief Executive Officer of Anglo Platinum.

**John Havinga** is retired Managing Director of the Mining Products Division of Grinaker-LTA Limited.

**Chris Herold** is Consulting Engineer/Umfula Wempilo Consulting.

**Stephan Heyns** is Professor in the Department of Mechanical and Aeronautical Engineering, UP.

**Henry Herring** is Industry Leader, Property, Aurecon.

**Diane Hildebrandt** is at Unisa's College of Science, Engineering and Technology.

**Emile Horak** is a founding Partner of KUBU Consultancy (Pty) Ltd and Emile Horak and Associates (Pty) Ltd.

**Graham Howell** is Chairman of SRK Consulting (SA) as well as a Partner and Principal Engineer.

**Stefan Hrabar** is Director of Mirlem (Pty) Limited and founder member of SAOGA.

**Fred Hugo** is retired Director of the Institute of Transport Technology, Department of Civil Engineering, SU.

**Dave Hulbert** is Specialist Consultant, Hydrometallurgy at Mintek.

**Nelson Ijumba** is Honorary Professor of Electrical Engineering, UKZN and Deputy Vice-Chancellor Academic Affairs and Research, University of Rwanda.

**Sunny Iyuke** is Professor in the School of Chemical & Metallurgical Engineering, Wits.

**David Jacobson** is an international consultant.

**Abbas Jamie** is Head of Business Development Aurecon Group.

**Herman Joubert** is Managing Member of Tech IQ Consulting Engineers CC.

**Johan Joubert** is Professor in the Department of Electrical, Electronic and Computer Engineering, UP.

**Elsabe Kearsley** is Professor, Department of Civil Engineering, UP.

**Carl Kies** is CEO of Reutech Radar Systems.

**Andrew Kirby** is Senior Vice-President: Corporate Administration, Toyota South Africa Motors.

**Hansie Knoetze** is Dean of the Faculty of Engineering, SU.

**Bingle Kruger** is retired CEO, BKS Group (Pty) Ltd (now AECOM).

**Bea Lacquet** is Professor of Electrical Engineering in the Faculty of Engineering and the Built Environment, Wits.

**Allyson Lawless** is Managing Director at SAICE Professional Development and Projects and Allyson Lawless and Associates (Pty) Ltd.

**Steve Lennon** is retired Group Executive: Sustainability at Eskom Holdings SOC Ltd.



**Barry Lessing** is retired Deputy Managing Director, Transnet.

**Alison Lewis** is Dean of the Faculty of Engineering and the Built Environment, UCT.

**Philip Lloyd** is Adjunct Professor at the Energy Institute at CPUT and a member of the Ministerial Advisory Council on Energy.

**Pierre Lombard** is retired General Manager of Spoornet.

**Leon Lorenzen** is Managing Director of Lorenzen Consultants (Pty) Ltd in Perth, Australia, Executive Consultant of Mintrex (Pty) Ltd in Perth and Extraordinary Professor at the Department of Process Engineering, SU.

**Willem Louw** is retired Managing Director of Sasol Technology and Director of the Centre for Business Management of Projects, SU.

**Hylton Macdonald** is retired Construction Advisor Aveng Ltd and Director of HKM Consulting.

**Neil Macleod** is retired Head: Water and Sanitation in the eThekweni Municipality and now works as a specialist water and sanitation consultant and is an Honorary Research Fellow at UKZN.

**Thembinkosi Madikane** is Managing Director of Igoda Projects (Pty) Ltd.

**Nape Maepa** is retired Chairman of the SA Telecommunications Regulatory Authority.

**Danai Magugumela** is Managing Director at Bosch Semele.

**Sunil Maharaj** is Dean of the Faculty of Engineering, Built Environment and Information Technology, UP.

**Vineshwar Maharaj** is Director of Sales & Marketing, Yokogawa SA (Pty) Ltd.

**James Maina** is Professor, Department of Civil Engineering, UP.

**Thoko Majozi** holds a SARChI Chair in Sustainable Process Engineering at the Wits University School of Chemical and Metallurgical Engineering.

**Jan Malherbe** is Emeritus Vice-Principal and Professor in the Department of Electrical, Electronic and Computer Engineering, UP.

**Trevor Manuel** was Minister in The Presidency: National Planning Commission.

**Roy Marcus** is Chairman of The Da Vinci Institute for Technology Management and Chairman of the Council of UJ.

**John Marriott** is retired General Manager of SASOL.

**Tshilidzi Marwala** is Deputy Vice-Chancellor: Research at UJ.

**Josua Meyer** is Head of the Department of Mechanical and Aeronautical Engineering and Chairman of the School of Engineering, UP.

**Petrie Meyer** is Professor in the Department of Electrical and Electronic Engineering, SU.

**Rodney Milford** is Programme Manager: Construction Industry Performance at the Construction Industry Development Board.

**Mafika Mkwana** is non-executive Director of Hulammin, Mediterranean Shipping RSA and Stefanutti and Stocks.

**Allen Morgan** is Chairman of Biotherm Energy (Pty) Ltd and retired CEO of Eskom.

**Dawid Mostert** is retired CEO of Dorbyl and Past-President of SEIFSA.

**Floris Muller** is retired Director/CEO of MLS Test Systems (Pty) Ltd.

**Mike Muller** is a Visiting Adjunct Professor at the Wits University School of Governance and is consulting internationally.

**Johann Murray** is Managing Director of Ultimate Air Solutions (Pty) Ltd and retired founder Principal of MBB Consulting Engineers.

**Dempsey Naidoo** is Managing Director of Mott MacDonald.

**William Nairn** is retired Group Technical Director, Anglo American Plc.

**Felix Ndlovu** is Head of Engineering, Cross Border Projects, Rail Network, Transnet Freight Rail, Transnet.

**Mongezi Ntsokolo** is Group Executive of the Eskom Transmission Division.

**Gerald Nurick** is Professor of Mechanical Engineering, UCT.

**Cyril O'Connor** is an Emeritus Professor and Senior Research Scholar at UCT.

**Adi Paterson** is CEO of the Australian Nuclear Science and Technology Organisation.

**Willem Perold** is Vice-Dean of Research in the Faculty of Engineering, SU.

**Bryan Perrie** is Managing Director of the Concrete Institute.

**Francis Petersen** is Deputy Vice-Chancellor, UCT.

**Terry Pidgeon** is Specialist Consulting Engineer at Ultimate Raft Designs and Director of Research at the Centre for Excellence in Foundation Engineering.

**Willie Pienaar** is Managing Director, Tolplan Consulting (Pty) Ltd.

**Graham Pirie** is retired CEO of Consulting Engineers South Africa.

**Calie Pistorius** is Vice-Chancellor of the University of Hull in the UK and former Vice-Chancellor of UP.

**Chris Pistorius** is Professor of Materials Science and Engineering at the Carnegie Mellon University in Pittsburgh in the USA.

**Tony Press** is Projects Executive at Algoa Project Services.

**Tinus Pretorius** is Professor, Head of Department and Chairman of the Graduate School of Technology Management, UP.

**Vic Prins** is Director Business Line Aviation of Royal HaskoningDHV in the Netherlands.

**Bob Pullen** is an independent Civil Engineering Consultant: Management of Water Resources and related fields.

**Deresh Ramjugernath** is Pro Vice-Chancellor: Innovation, Commercialisation, and Entrepreneurship, UKZN.

**Daya Reddy** holds the South African Research Chair in Computational Mechanics in the Department of Mathematics and Applied Mathematics, UCT.

**Tony Redman** is Group Technical Director and Chairman of Anglo Coal.

**Felix Reinders** is Research Team Manager: Irrigation and Drainage Engineering at the ARC's Institute for Agricultural Engineering.

**Christine Render** is retired Executive Manager Engineering at Sasol Technology (Pty) Ltd and currently Consulting Partner at OTC.

**Paul Roberts** is an independent specialist consultant on water resources and water engineering.

**Howard Roberts** is an oil and gas project consultant.

**Gustav Rohde** is Chief Operating Officer of Aurecon.

**Albert Rooseboom** is Emeritus Professor in Hydraulics, Faculty of Engineering, SU.

**John Sampson** is retired Managing Director of Transportation and Traffic Technology Africa (Pty) Ltd and now a consultant.

**Roelf Sandenbergh** is Professor in the Department of Materials Science and Metallurgical Engineering, UP.

**Adriaan Scheeres** is CEO and co-founder of Pragma.

**Arnold Schoonwinkel** is Vice-Rector for Learning and Teaching, SU.

**Mike Shand** is a consultant at Aurecon.

**Pepi Silinga** is Chief Executive of the COEGA Development Corporation.

**Saurabh Sinha** is Professor and Executive Dean: Faculty of Engineering and the Built Environment, UJ.

**Johan Slabber** is Professor in the Department of Mechanical and Aeronautical Engineering, UP.

**Dick Stacey** is Emeritus Professor in the School of Mining Engineering, Wits.

**Bob Stanway** is retired Executive Director: Transportation in the City of Johannesburg.

**David Stephenson** is Emeritus Professor of Hydraulic Engineering, Wits and Adjunct Professor, University of Botswana.

**Jasper Steyn** is Professor Emeritus in the Department of Engineering and Technology Management, Graduate School of Technology Management, UP and Manager: Government Incentive Schemes at the Automotive Industry Development Centre.

**Herman Steyn** is Professor in Electronic Engineering and Head of the Department of Electrical and Electronic Engineering, SU.

**Pieter Strauss** is retired member of management in BKS and works as specialist consultant.

**Waldo Stumpf** is Professor and Acting Head of the Department of Materials Science and Metallurgical Engineering, UP.

**Harry Swart** is Manager of the business processes service line at Bentley West Management Consultants.

**Christina Trois** is Professor and Executive Dean: Faculty of Engineering and the Built Environment, UKZN.

**Willem van Biljon** is Technical Manager at DCD Protected Mobility in Isando.

**Jack van der Merwe** is CEO, Gautrain.

**Nielen van der Merwe** is Visiting Professor, School of Mining Engineering at Wits and a rock engineering consultant.

**Pieter van der Walt** is consultant at Reutech Radar Systems and Professor Extraordinary in Electrical and Electronic Engineering, SU.

**Jannie van der Westhuizen** is retired Group General Manager of Sasol Limited.

**Frank van Duuren** is a retired consulting engineer/specialist in water and public health engineering.

**Willem van Niekerk** is Senior Vice-President, Tronox, USA.

**Wikus van Niekerk** is Director of the Centre for Renewable and Sustainable Energy Studies, SU.

**Peter van Niekerk** is retired Water Resources Engineering Expert in the Department of Water Affairs and a specialist consultant.

**Theo van Robbroeck** is retired Director-General of the Department of Public Works.

**Eric van Steen** is Professor and Head of Department in the Department of Chemical Engineering, UCT.

**Daan van Wyk** is Visiting Professor, UJ.

**Gideon van Zijl** is Professor, Department of Civil Engineering, SU.

**Arnold van Zyl** is Rector of the Chemnitz University of Technology in Germany.

**Olaus van Zyl** is retired CEO BKS Group (Pty) Ltd and Project Coordinator Gautrain Project.

**Kit Vaughan** is Emeritus Professor of Biomedical Engineering, UCT and CEO of CapeRay Medical (Pty) Ltd.

**Kobus Venter** is a retired Divisional Director of BKS (AECOM) and consults through Dr J P Venter Consulting Services.

**Alex Visser** is Emeritus Professor of the Department of Civil Engineering, UP.

**Fritz Wagener** is retired CEO of Jones & Wagener and presently Director of Fritz Wagener & Associates.

**Kevin Wall** is a development consultant and Extraordinary Professor, Faculty of Engineering, UP.

**Ronald Watermeyer** is Director of Infrastructure Options (Pty) Ltd

**Allan Wijnberg** is Director CEO of PRDW (Pty) Ltd Consulting Port and Coastal Engineers.

**Rob Williamson** is retired Director of Knight Piésold (Pty) Limited.

**Jan Wium** is Professor, Department of Civil Engineering, SU.

**Dave Wright** is retired Special Advisor to the CEO/MD, Engen Petroleum Ltd.

**Xiaohua Xia** is Professor in Electrical, Electronic and Computer Engineering, UP.

**John Zietsman** is founding Director of Zietsman Lloyd & Hemsted.

**Alphose Zingoni** is Professor of Structural Engineering and Mechanics in the Department of Civil Engineering, UCT.

