



Accelerating Science Technology and Innovation Impact

2019 ANNUAL
UPDATE



The African Academy of Sciences

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Lilly Paemka, DELTAS Africa postdoctoral fellow

List of abbreviations

| | |
|-------------------|---|
| AAS | African Academy of Sciences |
| AESA | Alliance for Accelerating Excellence in Science in Africa |
| AAS Open | AAS Open Research |
| AESA-RISE | AESA RISE Postdoctoral Fellowship |
| AIMF | Africa-India Mobility Fund |
| APTI | African Postdoctoral Training Initiative |
| ASD | Africa Science Desk |
| AUDA-NEPAD Agency | African Union Development Agency-NEPAD |
| CPE | Community & Public Engagement |
| CTC | Clinical Trials Community |
| CIRCLE | Climate Impact Research Capacity and Leadership Enhancement |
| CR4D | Climate Research for Development |
| DELTA Africa | Developing Excellence in Leadership, Training and science in Africa |
| FLAIR | Future Leaders – African Independent Research |
| GC | Governing Council |
| GC Africa | Grand Challenges Africa |
| GGC | Global Grant Community |
| H3Africa | Human Heredity and Health in Africa |
| ReMPro Africa | Research Management Programme in Africa |
| R&D | Research and Development |
| SLM | Science and Language Mobility Scheme Africa |
| STI | Science, Technology and Innovation |
| SINCERE | Spurring Innovations for forest eCcosystem services in Europe |

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ACCELERATING SCIENCE, TECHNOLOGY AND INNOVATION IMPACT

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RE-ENERGISING R&D LEADERSHIP AND INFRASTRUCTURE

The AAS is building R&D environments that support a vibrant research culture and leadership development over the long term

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INVESTING IN FUTURE GENERATIONS OF SCIENTISTS

Early career researcher programmes provide support to both improve research skills and to develop a wide range of research-related insights



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CLOSING CRITICAL GAPS

- Research Management Programme in Africa (ReMPro Africa)
- Mobility Grants
- Global Grant Community
- Research Management Programme in Africa (ReMPro Africa)
- Science communication

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FOSTERING A CULTURE OF ENTREPRENEURSHIP AND INNOVATION

The AAS values a culture of entrepreneurship and innovation, and Grand Challenges Africa puts innovation at the forefront.

34

SCIENCE ADVOCACY

AAS-funded researchers continue to generate data and evidence that establishes them as experts and arms those advocating for science to engage potential funders and policymakers to drive the continental scientific agenda.



36

RECOGNISING SCIENTIFIC EXCELLENCE

We envision that as African scientists are funded through our programmes, their output will increase, creating more products and contributing evidence to policy, thereby gaining increased global recognition.

41



STRENGTHENING INTERNAL COHERENCE

In order to implement the Academy's ever growing activities, AAS staff has grown to 64, including 11 new nationalities.

44



ABOUT THE AFRICAN ACADEMY OF SCIENCES

The AAS tripartite mandate is to recognise excellence through AAS' highly prestigious fellowship and award schemes, provide advisory and think tank functions for shaping Africa's Science, Technology and Innovation (STI) strategies and policies, and implement key STI programmes to address Africa's development challenges.



Accelerating Science, Technology and Innovation Impact

As the only pan-African science Academy, the African Academy of Sciences (AAS) is sharply focused on implementation of programmes, grantmaking, advocacy, recognising scientific excellence and shaping the continent's science agenda. In realising this mandate, approaches have been refined to shape and revolutionise the promotion and development of science and technology on the continent. We share lessons learned in discharging our mission in this year's annual update. The AAS was established by Fellows, who also have an oversight of the Academy. Since the establishment of the Alliance for Accelerating Excellence in Science in Africa (AESA), we are noting that our programmes can provide a pipeline for scientists to progress from early career scientists to senior researchers, innovators and eventually become Fellows based on the recognition of their work.

'No African institution left behind in advancing science'

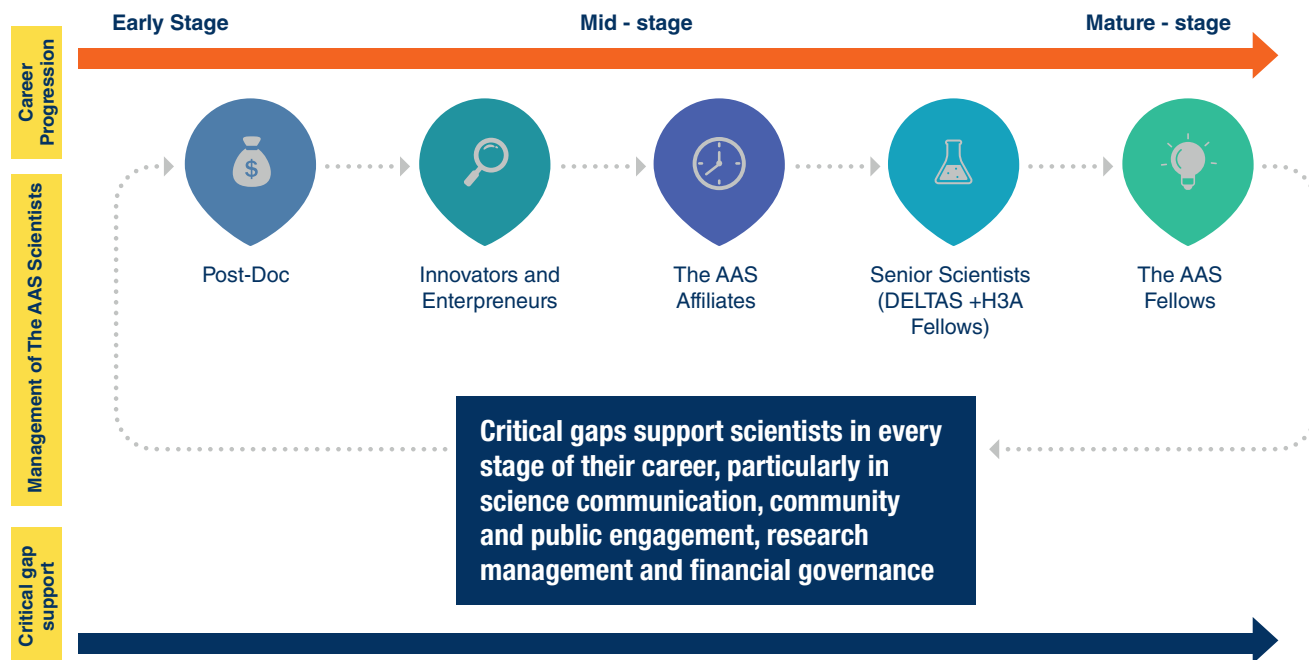
An important part of our mandate is to implement scientific research and the programmes necessary to support it. In 2019, we added two programmes, growing our portfolio to more than 15 and reinforcing our position as Africa's foremost scientific research grantmaking organisation. Our programmes are implemented through the Alliance for Accelerating Excellence in Science Africa (AESA), the agenda-setting, funding and programme management platform created in partnership

with the African Union Development Agency-NEPAD (AUDA-NEPAD). In 2019 alone, the Academy issued grants to 186 grantees totaling \$107M in science support in Africa.

Grantees are selected through a competitive process that in 2019 attracted 1,065 applications for the 11 calls issued by the AAS. The success rate of applications was 5-11% across programmes. This low number reflects both the selective quality of the Academy's grantmaking and, more importantly, the need to increase investment in advocacy for R&D funding in Africa, which is a priority for the AAS.

The positioning of the Academy as the leading science grantmaker in Africa has offered insight into Africa's complex R&D ecosystem and is changing how we do business. Since grantmaking criteria favour quality, a disproportionate number of grants has naturally been allocated to countries with stronger existing R&D capacities, including infrastructure, human resources and demonstrated ability to manage funds. Yet many researchers with tremendous intellectual capacity continue to work on the continent in under-resourced environments with weak infrastructure including physical space, state-of-the-art equipment and access to research and technology platforms in their home institutions. Institutional support is also inadequate, often forcing researchers to spend the bulk of the time they otherwise would have spent on research and/or teaching instead on administration, leaving just evenings and

The AAS Researcher's pipeline



"We recognise that the researchers' career progression is not linear and does not mean for example that a postdoctoral fellow has to become an innovator or an AAS Affiliate. They can through their research, progress to professorship and subsequently become a Fellow of the AAS. The emphasis here is that the AAS recognises that there is a pipeline/progression from an early rising research leader and as they progress the AAS endeavours to support this pipeline not only in funding the research that they undertake but also in building R&D infrastructure, mentorship, research management, financial governance and business development aspects for innovators/entrepreneurs. The ultimate goal is to create an enabling environment for scientists to thrive."

weekends to carry out their research. This can threaten the delivery, integrity and quality of research. As one would expect, the disadvantages faced by applicants from such resource-starved environments is reflected in the quality of their applications to AAS programmes, which rarely can compete successfully with applications from better-resourced African institutions that enjoy relatively well-established support structures.

As a pan-African organisation, the Academy is duty bound to ensure that 'no institution or researcher' is left behind as we advance science, technology and innovation (STI) on the continent.

To promote inclusion while maintaining quality science, the Academy has updated grant conditions



Grantees are selected through a competitive process that in 2019 attracted 1,065 applications for the 11 calls issued by the AAS.

to require applications for collaborative grants to include institutions that currently lack capacity to conduct quality R&D.

In 2019, we continued with our core mandate of recognising excellence of electing Fellows and Affiliates marked

by a revision of the nomination process to enable us to diversify disciplines, gender and country representation.

These strategic shifts will continue in 2020 as we seek to amplify our work, gain more inroads in Africa and harness science for more Africans to lead better lives.

Join us on the journey!



Prof. Felix Dapare Dakora
President, African Academy of Sciences

A year of Africa science: plans for 2020

Engagement of Fellows

In 2020, we will consolidate the gains we made last year together with creating new initiatives to advance science in Africa. Key for us will be:



Defining scientific priorities

Over a five-year period, we will be implementing the African Science Technology and Innovation (STI) Priority Setting programme that will be developing, publishing and disseminating to relevant stakeholders, a set of position papers communicating the top 10 scientific priorities for Africa. These priorities will be defined through a consultative process with stakeholders across the continent, including scientists and policymakers. Our intention is to identify the top scientific priorities that, if addressed, offer the highest return on investment for Africa's sustainable development. In 2020, we will publish key white papers on maternal, neonatal and child health, climate change, genomics and data governance. Our engagement with stakeholders to define more of these priorities will continue in the year 2020.



Robust partnerships

We currently have over 30 partners who are collaborating with us to support science on the continent. These partnerships have yielded huge returns, enabling us to fund to the best talent on the continent to find local solutions for Africa's pressing problems. In 2020, we are looking to consolidate these partnerships together with adding new ones to advance our plans for an **African STI oasis**, a game changing campus to enable scientists to collaborate and define the continent's scientific agenda. (see page 33). We are also expanding the partnership with the European Union to enable us to jointly issue a call for R&D funding in 2020.

A year of Africa science: plans for 2020



Engagement of Fellows

Our Fellows are distinguished scientists who provide expertise in the implementation of our mandate. We are developing an engagement strategy to maximise the participation of this group of internal stakeholders in AAS activities. In 2019, a large number of Fellows participated as reviewers of grant applications, mentors in our AAS Mentorship scheme for early career scientists and members of AAS committees. We hope to triple this participation in 2020 to ensure we realise our vision of transformed lives through science in Africa.



Delivering on programmes

Since its establishment in 2015, the Alliance for Accelerating Excellence in Science (AESA), our programmatic platform being implemented in partnership with the African Union Development Agency-NEPAD, has been instrumental in attracting investments for implementing science programmes. We were especially proud of the renewal of funding for a second phase of the DELTAS Africa programme from Wellcome. 2020 will focus on implementing this second phase, selecting new grantees and advancing the training of future generations of scientists. AESA will continue issuing calls through its various programmes. Key will be mobilising funding for African scientists to respond to global emergencies, such as the COVID-19 pandemic, which poses a threat for the continent.

Strengthening governance



As a pan African Academy, we are cognisant of the importance of strengthening our governance to ensure we preserve our stakeholders' confidence, to bolster our performance and excellence as an organisation and to enable us to be well placed to respond to changes in the environment we operate in. As such, we will continue to develop by-laws and guidelines to facilitate governance and operational processes, a process that has been ongoing since 2018 and that saw us create new election by-laws for our Governing Council. These new by laws will govern the 2020 elections of a new GC, the policy and stewardship organ set up by

the General Assembly to provide oversight for the overall functioning of the Academy. The new GC is expected to be inducted in July and should lead the organising of the 12th General Assembly, which brings together Fellows and Affiliates of the AAS.



Prof Nelson Torto
Executive Director

A Highlights for 2019: These are the highlights our 2019 successes

01

- Endorsement of Plan S, a European Union initiative for open access publishing



02

- Official launch of Research Programme in Africa programme to create and sustain research environments that enable research to flourish
- Kick off of process to develop Good Research Management Practice (GRMP) standard for African academic and research institutions to benchmark and improve their research ecosystems



03

- A portal-based pre-certification scheme for the Good Financial Grant Practice standard launched to allow institutions to rate their capabilities to manage grants



04

- AAS Mentorship Scheme to develop early career researchers unveiled
- First round of Future Leaders – African Independent Research (FLAIR) postdoctoral fellows announced
- 1-year anniversary for AAS Open Research, the first African publishing platform to adopt open peer review



05

- Revised nomination processes for Fellows and Affiliates to increase numbers across disciplines, countries and gender
- Addition of two Governing Council (GC) committees – the Governance and Nominations Committee (GNC) and the Programmes Committee (PC) – to improve GC oversight.



06

- Creation of AAS Data and Biospecimen Governance Committee to create the Africa's first guidelines for collecting, storing and sharing data and specimens.



07

- 350 delegates at first ever DELTAS Africa Scientific Conference to showcase research from fellows



08

- Launch of the Africa Science Desk Journalism Awards
- Induction of new members of the GC committees
- First meeting for the new committees



09

- Kick off of consultation process for developing Clinical Trials Community
- Inaugural Connecting Minds Africa conference for early career researchers



10

- Second round of funding worth \$72 M received from Wellcome for DELTAS Africa
- Grand Challenges Annual Meeting



11

- The AAS land changes from trusteeship to its own name from trusteeship to its own name



12

- Inaugural meeting for Chairs of AAS working groups held in South Africa
- Second DELTAS Africa call with extended remit including non-communicable disease, public health, social sciences and humanities, implementation science and climate change



AAS Governance

With special thanks to the leadership of the AAS under whose direction, the AAS has grown in leaps and bounds and who are defining the future of the Academy:

The Governing Council

The Governing Council that consists of 11 officers charged with the responsibility of reviewing and assessing the Academy's programmes to ensure they are in line with the priorities of the General Assembly.



Prof. Felix Dapare Dakora
Chair, Governing Council
Ghanaian



Prof Barthelemy Nyasse
General Secretary
Cameroonian



Prof Amina Abubakar
Treasurer
Kenyan



Prof Vincent Titanji
Vice President, Central Africa
Cameroonian



Prof Elly Sabiiti
Vice President, East Africa
Ugandan



Prof Abdel-Aty Mahmoud
Vice President, North Africa
Egyptian



Dr Boitumelo Kgarebe
Vice President, Southern Africa
Motswana



Prof Robert Guiguemde
Vice President, West Africa
Burkinabe



Victoria Sabula
General Counsel & Board Secretary
Kenyan



Frederick Murunga
Finance, Risk, Audit & Compliance
Kenyan



Mahama Ouedraogo
Director, AU Commission
for Human Science and
Technology
Burkinabe

The Finance, Risk, Audit and Compliance Sub-Committee

Finance, Risk, Audit and Compliance Sub-Committee, which in addition to audit, risk and compliance also has oversight on strategy, Human Resources plan and Financial reporting. The listing below depicts the nationalities and the AAS disciplines to which the Fellows belong to.



Frederick Murunga
Chairperson
Kenyan



Dr Boitumelo Kgarebe
Vice President, Southern Africa
Motswana



Prof Amina Abubakar
Ex officio
Kenyan



Prof Nicholas Biekpe
Cultural Sciences, Humanities
& Social Sciences
Kenyan



Patricia Kabuleeta
Law, Governance, Policy
Ugandan



Paul Sagnia
Banking
Gambian



Memory Nguwi
Industrial Psychology
Zimbabwean

The Governance and Nominations Committee (GNC)

The Governance and Nominations Committee assists the GC in its governance stewardship and oversight responsibilities ensuring that the Academy is governed in line with best practices and in compliance with the Constitution of the AAS. The Committee establishes process of members joining the Governing Council for consideration and possible approval; recommends to the Governing Council corporate governance principles and policies applicable to the Academy; and vets and recommends to the Governing Council individuals nominated to become members of the Academy. The listing below depicts the nationalities and the AAS disciplines to which the Fellows belong to.



Prof Vincent PK Titanji
Chair
Cameroonian



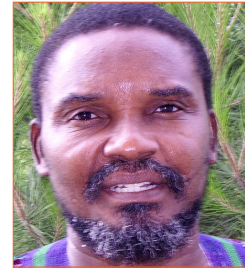
Prof Elly Sabiiti
Vice President, East Africa
Ugandan



Prof Barthelemy Nyasse
Ex officio
Cameroonian



Prof Rosanne Diab
Geological, Environmental,
Earth and Space Sciences
South African



Prof Mahouton Hounkonnou
Mathematical Sciences
Beninese



Prof Akissa Bahri
Agricultural & Nutritional
Sciences
Tunisian



Prof Evance Kalula
Cultural Sciences, Human-
ities and Social Sciences
Zambian

Programmes Committee

The AAS Programmes Committee assists the GC in overseeing the AAS scientific programmes and is accountable for the achievement of the Academy's objectives. The committee assists the GC in carrying out its duties regarding the development and implementation of the Academy's programme activities, and is also responsible for ensuring the Academy has high level advice from individuals with significant expertise in each program managed by the AAS.



Prof Alinah Kelo Segobye
Chair
Motswana



Prof Shaban Khalil
Physical Sciences
Egyptian



Prof Aggrey Ambali
AUDA representative
Malawian



Prof Amina Abubakar
AAS Treasurer
Kenyan



Prof Mahmoud Abdel Aty
Vice President, North Africa
Egyptian

The AAS Executive/Senior Management Team

This is a team of individuals at the highest level of management of the AAS secretariat overseeing with the day-to-day affairs of managing the Academy.



Prof Nelson Torto
Executive Director



Prof Tom Kariuki
Director of Programmes



Dr Isavyani Naicker
Director of Strategy and
Partnerships



Dr Alphonsus Neba
Director - Science Support
and Systems



Rosemary Akinyi
Head of Human Resources
and HR Programme
Manager, DELTAS Afric



Hannah Ngugi
Head of Finance and Grants



Juliette Mutheu-Asego
Head of Communications
and PR



Christine Kuto
Legal and Compliance
Officer



Prof Kevin Marsh
Senior Advisor



Michael Kilpatrick
Senior Advisor, GGC



Elizabeth Marincola
Senior Advisor,
Communications & Advocacy





Moi University Equipment Service
and Calibration tag
Date: 11/11/19
Item Number: 0020336
Technician: Benson M
Due date: 11/11/19

Jesse Gitaka, GC Africa innovator and AAS Affiliate



Implementing STI programmes

The AAS's programmes are implemented through the AESA, a platform it created jointly with the African Union Development Agency-NEPAD. AESA's activities are guided by a business plan running from 2016-2021 that has four strategic goals:

■ **Goal 1:** Build R&D environments that support a vibrant research culture and leadership development over the long term

■ **Goal 2:** Support the development of an innovation and science driven entrepreneurial culture

■ **Goal 3:** Identify and support rising research leaders to stay and build their careers in Africa

■ **Goal 4:** Target critical gaps in the research landscape

AESA graphic shows platforms and programmes falling under it

The implementation of the business plan, has enabled the AAS, through AESA, to increase its investment in R&D and impact the continent as follows:



Working in collaboration with key African and international partners, AESA has provided researchers with the funding, training and resources they need to succeed and drive forward Africa's development. | **Tom Kariuki, Director of Programmes**

AESA Major Programmes

More than 13 created since 2015

Building R&D leadership & Infrastructure

- DELTAS Africa
- H3AFRICA
- Clinical Trials Community

Innovation & Science Entrepreneurship

- Grand Challenges Africa
- Industry Partnerships

Rising Research Leaders

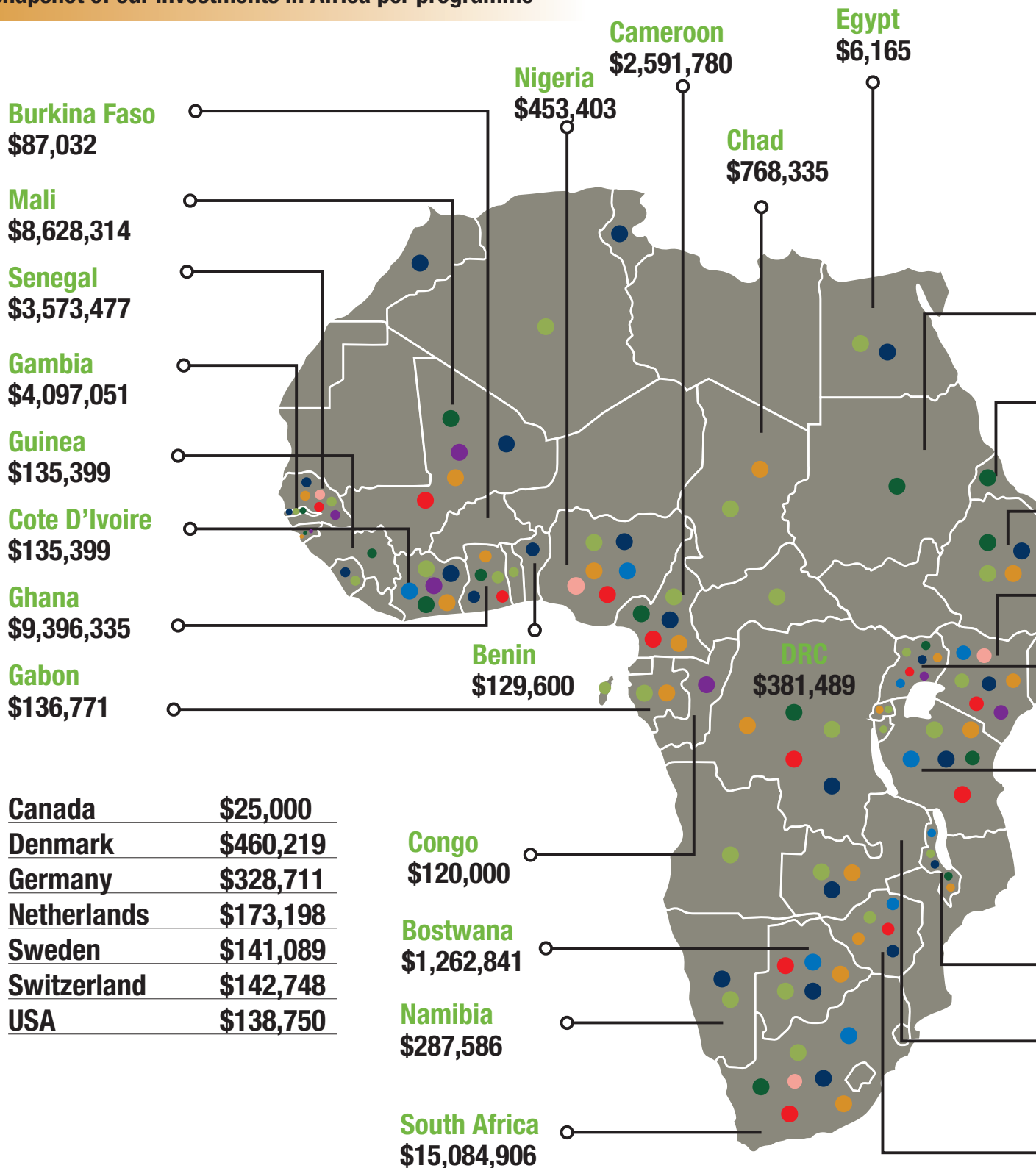
- AFFILIATES
- CIRCLE
- RISE
- FLAIR
- APTI
- Sincere

Filling Critical Gaps in R&D Ecosystem

- Research management
- Global Grant Community
- Community & Public Engagement
- Science Communication - Africa Science Desk
- Open Publishing
- CARI

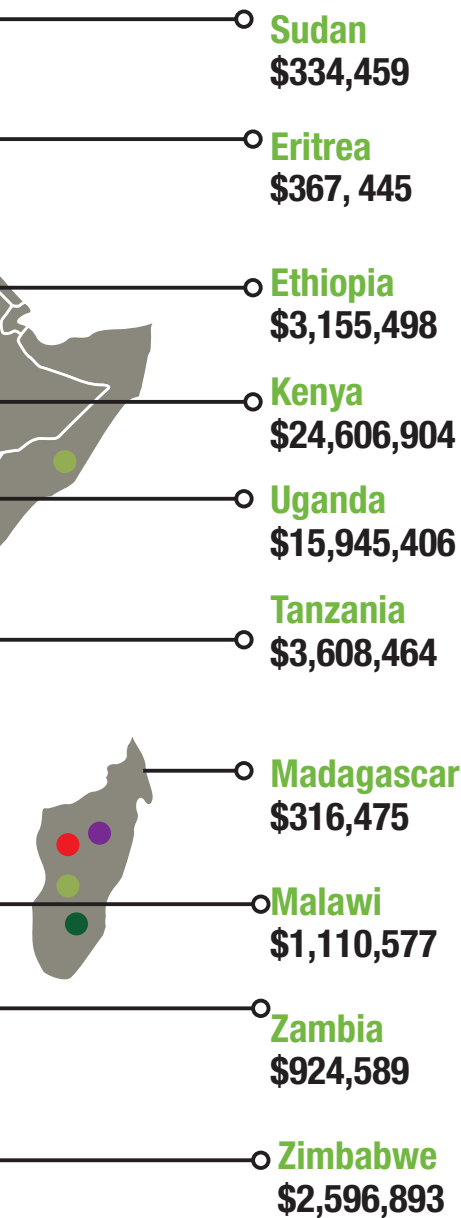
Programmes by Country

This is a snapshot of our investments in Africa per programme



TOTAL

\$107,252,232



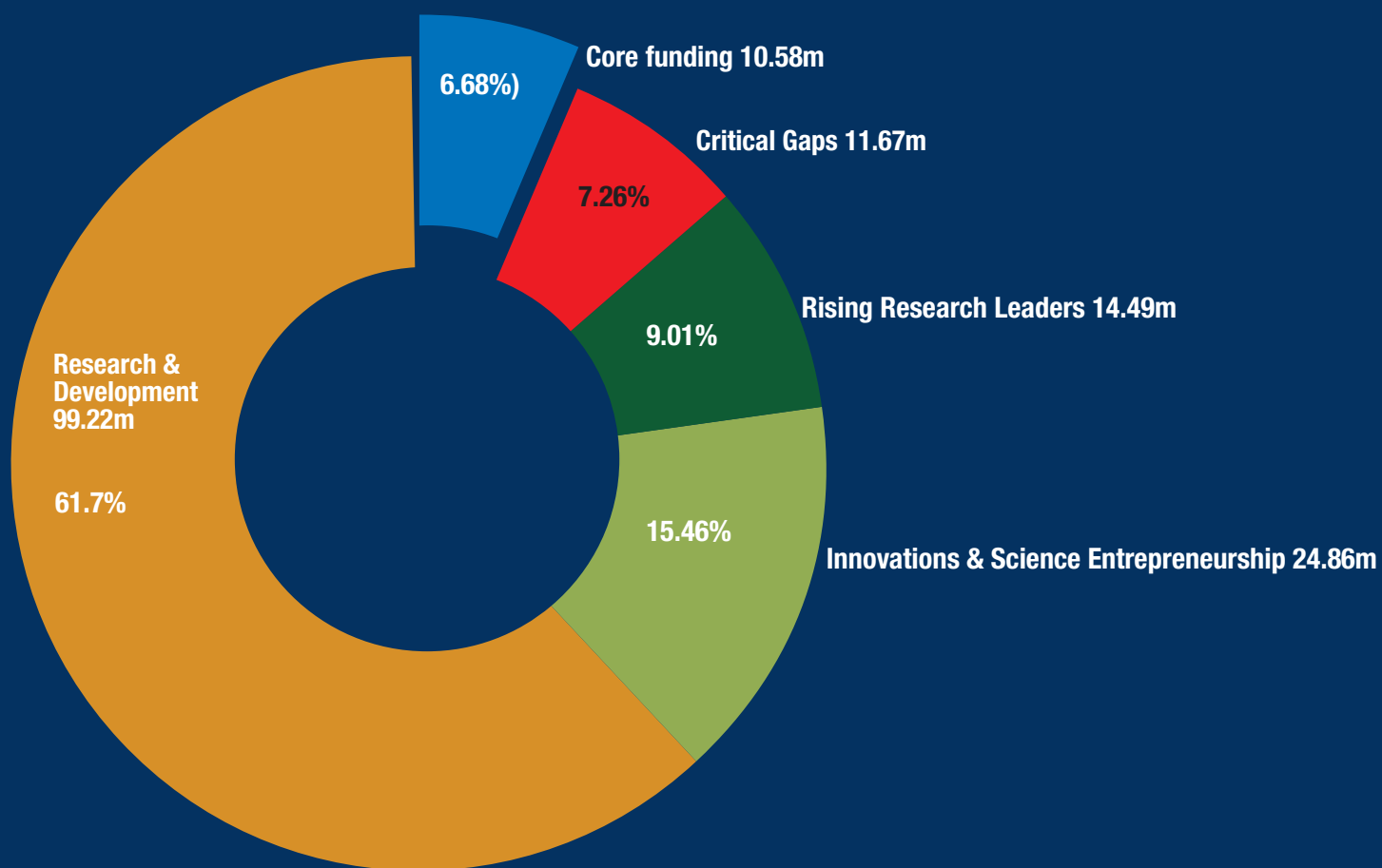
Key: Programmes by Country

| | |
|--|-------------------------|
| | DELTA Africa |
| | H3Africa |
| | Grand Challenges Africa |
| | Postdoctoral programmes |
| | Mobility grants |
| | CPE Seed Funds |
| | Africa Science Desk |
| | ReMPro Africa* |

*Not a representation of funding but where ReMPro Africa's partners are located

| Region | Amount | Percentage |
|-----------------|--------------------|---------------|
| West Africa | 32,162,933 | 29.99 |
| Central Africa | 3,748,374 | 3.50 |
| North Africa | 6,165 | 0.01 |
| East Africa | 48,300,162 | 45.04 |
| Southern Africa | 21,620,480 | 20.16 |
| Outside Africa | 1,409,714 | 1.31 |
| Total | 107,247,829 | 100.00 |

Grant Commitments by Pillars



The activities undertaken to implement STI programmes are:

Re-energising R&D leadership and infrastructure

DELTA Africa

Our flagship programme, **Developing Excellence in Leadership, Training and Science (DELTA Africa)** funds collaborative networks/consortia led by Africa-based scientists to amplify Africa-led development of world-class research and scientific leaders on the continent, while strengthening African institutions. The first phase supported the training of 1,852 undergraduate, master's, PhD, postdoctoral and senior researchers.

DELTA Africa invited applications in 2019 that sought to balance research excellence and equity by encouraging collaborative networks of researchers that are relatively rich and relatively poor in support resources. This second phase of the DELTA Africa programme is enabled by a new \$72M investment from Wellcome and the UK Department for International Development (DFID), extending the programme for an additional five years, to 2025. Other refinements to this second DELTA call were based on a 2018 mid-term assessment which recommended greater gender equity and a greater diversity of disciplines. The AAS has been successful in recruiting a gender balance of 50:50 across most of its programmes, but efforts to increase the number of women scientists must go beyond recruitment to promoting equity — ensuring that both men and women have access to a full range of opportunities for their careers to thrive. Currently, for example, the publication rate in DELTA Africa is 20% for women scientists, compared to 60% for men. In response, we are developing an AAS gender strategy and the DELTA Africa Seed Fund on Gender Equity in Science has funded seven scientists to promote the inclusion of women in research.

Our flagship programme, Developing Excellence in Leadership, Training and Science in Africa (DELTA Africa) funds collaborative networks/consortia led by Africa-based scientists to amplify Africa-led development of world-class research and scientific leaders on the continent, while strengthening African institutions. The first phase supported the training of 1,852 undergraduate, master's, PhD, postdoctoral and senior researchers.

Among the areas of expansion enabled by the extension of DELTA Africa are new priority research areas, including non-communicable disease, public health, social sciences and humanities, implementation science and climate change. These are in addition to programmes in infectious disease and mental health that constituted a large presence in DELTA Africa Phase I. The inclusion of social sciences seeks to redress the dearth of social science research leadership from the continent and the need for contextually relevant social science and humanities research outputs. These are essential for effective and efficient policy formulation and implementation of African social and public health policy and reinforces the importance of the AAS Think Tank for African governments to exploit research-based information to inform public policy.

Researchers from the first phase have gone on to conduct research and contribute knowledge to advance the health of Africans. Many of these scientists were among the 350 delegates of the 2019 annual DELTA Africa Scientific Conference held in Dakar, Senegal, which provided them a platform to share their research. Abstracts from this meeting can be found on AAS Open Research on the DELTA Africa gateway.



DELTA Africa has funded research that is generating knowledge for improving health systems and to create a productive and healthy workforce that can contribute to socio-economic development on the continent. | **Alphonsus Neba, Deputy Programmes Director- Science Support and Systems and Programme Manager, DELTA Africa**

DELTA Africa Funded Programmes Overview

DELTA Africa Fellows recruited:

Supporting the Africa-led development of world-class researchers and scientific leaders in Africa.

| Programme | Masters | | PhD | | | Post Docs | | Snr Researchers | | Total | | Cumulative Total |
|--------------|---------|----|-----|----|----|-----------|---|-----------------|----|-------|------------|------------------|
| | M | F | M | F | M | F | M | F | M | F | | |
| Afrique One | 18 | 7 | 19 | 8 | 6 | 5 | 0 | 0 | 43 | 20 | 63 | |
| AMARI | 10 | 9 | 14 | 11 | 4 | 2 | 0 | 0 | 28 | 22 | 50 | |
| CARTA+ | 0 | 0 | 38 | 59 | 10 | 16 | 7 | 2 | 55 | 77 | 132 | |
| DELGEME | 16 | 11 | 6 | 7 | 4 | 3 | 4 | 2 | 30 | 23 | 53 | |
| IdEAL | 29 | 34 | 24 | 20 | 19 | 13 | 0 | 0 | 72 | 67 | 139 | |
| MARCAD | 8 | 7 | 5 | 6 | 6 | 4 | 0 | 0 | 19 | 17 | 36 | |
| MUII+ | 4 | 5 | 7 | 5 | 5 | 1 | 0 | 0 | 16 | 11 | 27 | |
| SANTHE | 13 | 25 | 12 | 21 | 6 | 8 | 0 | 0 | 31 | 54 | 85 | |
| SSACAB | 67 | 48 | 13 | 9 | 0 | 0 | 0 | 0 | 80 | 57 | 137 | |
| THRIVE -2 | 17 | 14 | 13 | 13 | 6 | 3 | 0 | 0 | 36 | 30 | 66 | |
| WACCBIP | 8 | 10 | 10 | 9 | 9 | 4 | 0 | 0 | 27 | 23 | 50 | |
| Total | | | | | | | | | | | 838 | |

New grants won by programmes 2019 only

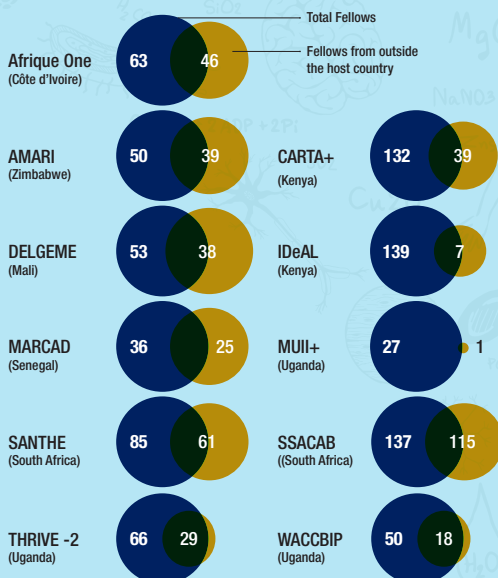
Creating a skilled scientific workforce that is attracting foreign direct investment in the form of grants

| Programme | Grants | Amount (\$) |
|-------------|--------|-------------|
| Afrique One | 4 | \$9,957,386 |
| AMARI | 3 | \$75,000 |
| CARTA+ | 1 | \$2,580,823 |
| DELGEME | 2 | \$65,000 |
| IdEAL | 56 | \$5,004,740 |
| MARCAD | 5 | \$2,438,203 |
| MUII+ | 1 | \$324,717 |
| SANTHE | 17 | \$5,242,573 |
| SSACAB | 3 | \$913,821 |
| THRIVE -2 | 17 | \$5,051,659 |
| WACCBIP | 5 | \$325,748 |

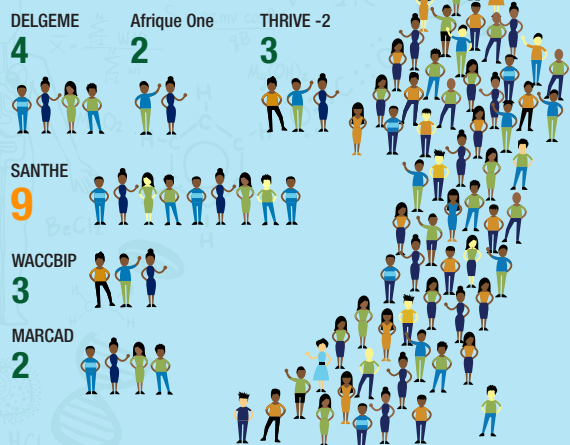


Fellows recruited through intra-Africa collaboration

Sowing seeds for intra-Africa collaboration by providing opportunities for researchers to network and know each other



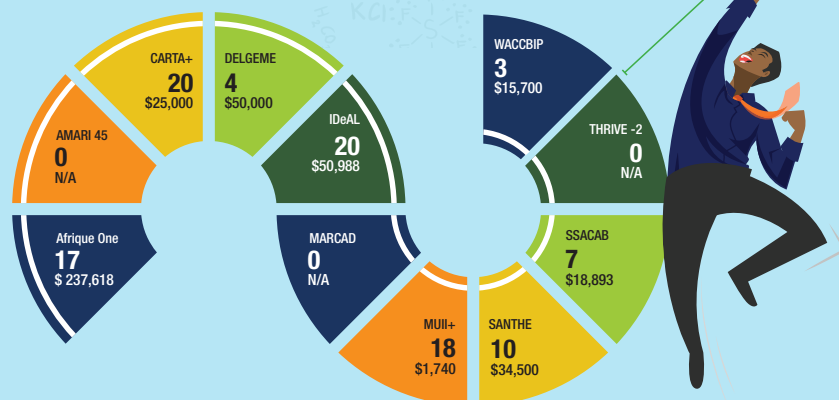
Programmes that have recruited from diaspora



Prizes won by programmes

No. of prizes
Amount (\$)

Collectively the programmes have attracted prizes in recognition of their scientific excellence



Grantee story

An affordable HIV drug resistance assay

Progress is being made on research towards an HIV cure in South Africa, and efforts towards the development of a low cost HIV drug resistance assay (70% lower cost - from \$100-\$200 to \$40-\$70), that could substantially reduce the cost of HIV drug resistance surveillance in Africa. Kaelo K. Seatla, Clinician Researcher at the Botswana Harvard AIDS Institute Partnership and a PhD fellow for the DELTAS Africa funded sub-Saharan African Network for TB/HIV Research Excellence (SANTHE) is leading the development of the assay.



Kaelo Seatla, DELTAS Africa grantee

AAS programmes are generating significant data and evidence to help redress the paucity of data on the content and to contribute to reducing its disease burden — currently Africa suffers 25% of the global burden of disease — and developmental challenges. This raises the sensitive issue of making critical data available for the greater global good without contributing to the perception of international scientific collaborations as reducing African scientists to ‘sample collectors.’

Human Heredity and Health in Africa

The issue has, particularly preoccupied the Human Heredity and Health for Africa (H3Africa) programme, a multi-million, multi-country and multi-year genomic research programme to increase understanding of how human genes and the environment are contributing to Af-

rica’s increased susceptibility or resistance to disease. As such, we have created the AAS Data and Biospecimen Governance Committee, which will provide guidelines for collecting, storing and sharing data and specimens in ways that protect study participants from exploitation, benefit African citizens and provide a resource for governments to create their own data policies.

H3Africa was launched in 2010 as a partnership among the US National Institutes of Health (NIH), Wellcome, and the African Society of Human Genetics (AfSHG). The AAS joined in 2016 to manage the Wellcome component of the programme, recruiting four grantees from Ethiopia, South Africa, the Gambia and Uganda.

In the seven years of its existence, H3Africa has been examining the relationship among genetic variation, the environment and health in African populations, generating data on the genome scale for over 50,000 research participants from across Africa.

15

African Countries covered by H3Africa lead institutions

36

Partner Institutions in Africa and the North

43

Masters, PhDs and Postdoctors enrolled

\$12 M

Invested

H3Africa genome scale data will provide a clearer and more detailed understanding of the genetic diversity of Africans and new insight into the history of human migration in Africa. It also has the potential to reveal some of the small differences in our genes that are influential in determining what makes Africa more susceptible or resistant to certain diseases and that can impact disease outcomes and response to treatment.

Jennifer Mabuka, H3Africa Programme manager

Snapshot of H3Africa data from programmes funded by the AAS

Grantee story

Establishing a Bioinformatics Research and Training centre in the Horn of Africa

Limitation in capacity for next generation sequencing and computation has made it difficult to conduct bioinformatics and genomic investigations directly in settings of high disease burden. Access to platforms and expertise in genomics data analysis will improve contributions of low- and middle-income country (LMIC) scientists in health research that may better address priority questions of interest. It will raise the quality of international collaboration, promote effective use of resources and

address inequity. Tuberculosis Genetics Network in Africa (TBGEN Africa) is a collaborative project that is building a Bioinformatics Research and Training centre in AHRI (Addis Ababa) to serve the Horn of Africa (Sudan, Eritrea, Ethiopia) and Cameroon in collaboration with Brighton and Sussex University Medical School, UK. To date, it has:

- Established state-of-the-art next generation sequencing facility with high end computational machine
- Conducted a series of hands-on training on site in sequencing in collaboration with international partners as part of human capacity building to the Bioinformatics Research and Training Centre team and local researchers
- Ongoing research on host pathogen interaction on tuberculosis

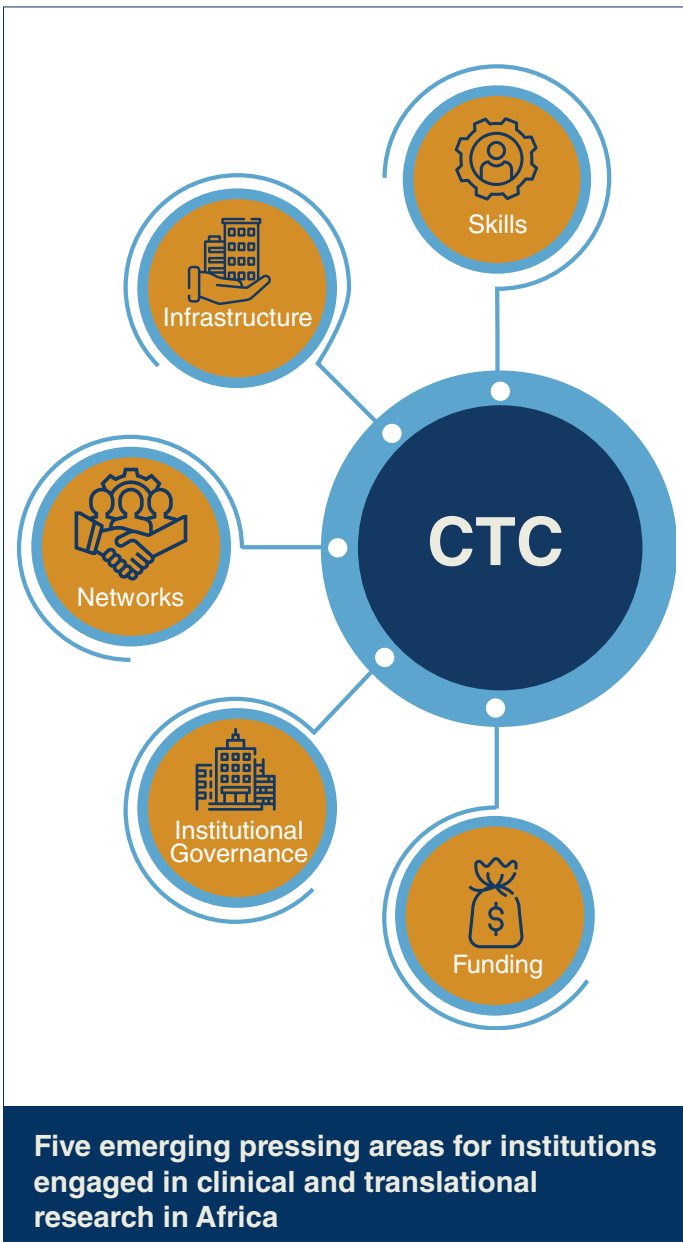


Mycobacterium tuberculosis

As a pan-African Academy, a priority is to leverage the gains of Phase I H3A to engage various funders going forward. Already, a new grant from the Bill & Melinda Gates Foundation will enable a call on human challenges as a partnership between H3Africa and Grand Challenges Africa. GC Africa is a programme created to spur innovation.

This collaboration marks the first time that our

programmes issue a collaborative call for applications. We believe that such coordination benefits our grantees and the African scientific community. We intend to expand this initiative to create internal coherence by building a pipeline that offers unique activities and opportunities for participants across AAS programmes that provide, among other support skills, mentorship, leadership, entrepreneurship and science communication training that scientists can leverage to develop their careers.



Clinical Trials Community (CTC)

The paucity of data is most damaging in clinical trials. In 2018, the Academy conducted a study to map the continent's clinical trial landscape and to identify opportunities for collective investment for stakeholders that include the pharmaceutical industry, international funders and governments. The study found that clinical trials in Africa are:

- Not consistent with the proportion of disease burden from non-communicable disease and lower respiratory infections. There is a high and growing proportion of disease in Africa from these sources which tends to be favoured by resources channelled to the development of drugs and drug treatment at the cost of the development of vaccines. Trials also tend to be limited to an early stage (Phase I), which again subordinates the role of African researchers and minimises their contributions to big breakthroughs.
- Unevenly distributed. Of the 26 ongoing clinical trials in Africa, nearly half of these are in South Africa, seven are in Egypt and five are in East Africa. Only two clinical trial research centres are in West Africa, and none are in Central Africa.
- Constraints in skills, infrastructure, networks, institutional governance and funding.

These findings have resulted in the establishment of the Clinical Trials Community (CTC) to strengthen all aspects of clinical trials and translational sciences capacity in Africa. The CTC's immediate goal is the creation and global adoption of a centralised, open-access platform/database of clinical research site capabilities on the African continent. Such a platform ensures that African countries collaborate and participate in all phases of clinical trials, from early- to late-stage, in their own countries or with regional or international partners. In 2019, the Academy hosted seven consultative workshops for scientists across the continent to establish the structure and format of this collaborative platform. These discussions will shape the development of this platform, currently underway.

Investing in future generations of scientists

The Academy's postdoctoral portfolio includes six programmes — Affiliates, African Postdoctoral Training Initiative (APTI), Future Leaders – African Independent Research (FLAIR), AESA-RISE Postdocs, Climate Research for Development (CR4D) and SINCERE (Spurring INnovations for forest eCosystem sERVICES in Europe). Each is designed to develop young research leaders who are able to conduct globally competitive research in African universities and research institutes and who contribute to building knowledge-based economies on the continent. Inspired by the dearth of postdoctoral opportunities in Africa, these programmes provide an array of skills training with a total investment of \$21 M, enabling PhD graduates to hone their leadership skills for a research environment and to position them to become tomorrow's seasoned research

leaders. Through these programmes, the AAS plays a catalytic role in encouraging African institutions to think critically about the role of postdoctoral programmes in their institutions to adapt form and content to suit their needs and priorities. In 2019, the portfolio issued calls for APTI, FLAIR, CR4D and Affiliates Cohort 5, German University of Cairo PhD and Postdoc Opportunities 2019 and TIBA-AAS Out of Africa Postdoctoral Fellowship, which together resulted in 78 new grantees who were taken through AAS induction workshops held for their respective programmes. The latter two calls were issued in partnership with AAS Fellows — Prof Ashraf Mansour in Egypt and Prof Francisca Mutapi in the UK, respectively. The induction workshops offer opportunities for scientists to network and explore ways to collaborate in addition to providing skills training. In 2019 we hosted the Connecting Minds Africa conference together with partners

to provide a platform for early career scientists to network.

Early career researcher programmes provide support to both improve research skills and to develop a wide range of research-related insights through the AAS Mentorship Programme and training workshops, such as the one on leadership and media engagement planned for 2020.

The AAS Mentorship Scheme was established in 2019 and has so far paired 72 early career researchers from FLAIR and the Affiliates programmes with senior mentors to support and guide them in grant writing, career path development, job application, research networking, science communication and research publishing, among other essential career development needs. In 2020, the mentorship agenda will be extended to include other programmes of the AAS.

Postdoc story

Small but mighty – using nanomaterials to provide communities with clean drinking water

Making an impact

Anita Elate, a grantee under the FLAIR programme, is working on using nanomaterials for water treatment. This study has wide-reaching impacts for Africa on various fronts. Exposure to mining contaminated water is widespread on the continent, including east and west Africa, where artisanal mining contaminates water consumed by large rural and semi-urban populations with such heavy metals as mercury and lead, with serious health implications. Her work provides a means for such populations to have access to clean potable water, avoid adverse health outcomes and begin to escape poverty through the use of their limited income for other beneficial uses.



Anita Elate, FLAIR postdoctoral fellow



This year we have seen the impact of our efforts to develop rising African research leaders in the growth of the quality of the research conducted by our grantees and the publication of their research evidence in both journals and other public media. Africa's development can now anticipate and benefit from homegrown transformative knowledge. | **Judy Omumbo, Programme Manager, Postdocs and Affiliates**

Closing critical gaps

The recruitment and training of future generations of scientists requires a thriving R&D ecosystem to create an enabling environment to develop ideas, generate knowledge and retain African talent on the continent. The past five years of funding research across the continent have allowed the Academy to delve deeper into the African R&D landscape and broaden knowledge of it. This knowledge has led to the launch of yet more new programmes to address constraints in the research ecosystem:

Community and Public Engagement (CPE)

With funding of \$1.8M, CPE is designed to ensure that African communities play a meaningful role in the deliberations, discussions, decision-making and implementation of research. This is particularly critical for research which involves these communities as study participants and/or the outcomes of which will affect them directly or specifically. The CPE was created to ensure that communities are empowered to understand the impact of research, which will also increase trust and research uptake. Thus, the CPE has three areas of strategic focus:

- Building and/or strengthening CPE capacity among AAS grant holders;
- Training of, and cross-learning among, engagement staff at the lead institutions of each research consortium, and
- Advocacy with institutional leadership to make the case for integration and prioritisation of CPE within institutions.

In 2019, the programme issued two calls targeted at DELTAS Africa grantees: the Seed Fund on Gender Equity in Science and the Community and Public Engagement (CPE) Seed Fund, a two-year scheme to support DELTAS Africa doctoral and postdoctoral trainees in innovative engagement projects to promote public participation in their research projects. The 20 grantees of these two calls were inducted in August and November, respectively.



Sophie Uyoga, DELTAS Africa CPE grantee

Grantee story

Creating a passion for CPE among African scientists

“Being a lab-based researcher, the experience of the CPE project took me to the field for the first time in 15 years of research. During the pilot reading group, we got positive reviews from the sickle cell patients and their parents who contributed to the content. The project has highlighted critical community engagement issues that need looking into as the survival of these patients goes way beyond the medical care that we provide.”

Uyoga’s project used comic books to raise the profile of the social issues and challenges that people living with sickle cell disease undergo.



Our community and public engagement activities are not only ensuring public participation in science but helping to shift scientists’ view and appreciation of the field |
Lillian Mutengu, Programme Manager, CPE

Mobility grants

Despite the similarity of challenges among many African countries, the lack of collaboration of its scientists is striking. According to a 2010 report by Thomson Reuters, among the continent's six strongest research nations – Algeria, Egypt, Kenya, Nigeria, South Africa and Tunisia — not one listed a fellow African country among its top five collaborating countries. The result is missed opportunities for sharing knowledge. The tragedy that can result was illustrated dramatically during the Ebola outbreak in West Africa, where the lack of intra-African collaboration left African researchers without the crucial benefit of knowledge and capacities from Uganda and the Democratic Republic of the Congo, which had previously experienced outbreaks of the disease.

Mobility grants also seek to distribute the gains from programmes like DELTAS Africa through the collaboration of African scientists with their continental and international counterparts. The mobility grants, the Science and Language Mobility Scheme Africa and the Africa India Mobility Fund (AIMF), were specifically created to increase scientific collaboration both among Africans of different countries and between African and Indian researchers. These schemes have to-date issued five AIMF calls and one SLM call, awarding a total of 19 grants across Africa and India.

Our mobility grants are bridging a communication gap between Anglophone and Francophone Africa and between Africa and India that is paving way for mutually beneficial and sustainable collaborations. **I Lillian Mutengu, Programme Manager, CPE**



Eric Ogola, AIMF grantee

Mobility grantee story

Working together to solve problems shared by Africa and India

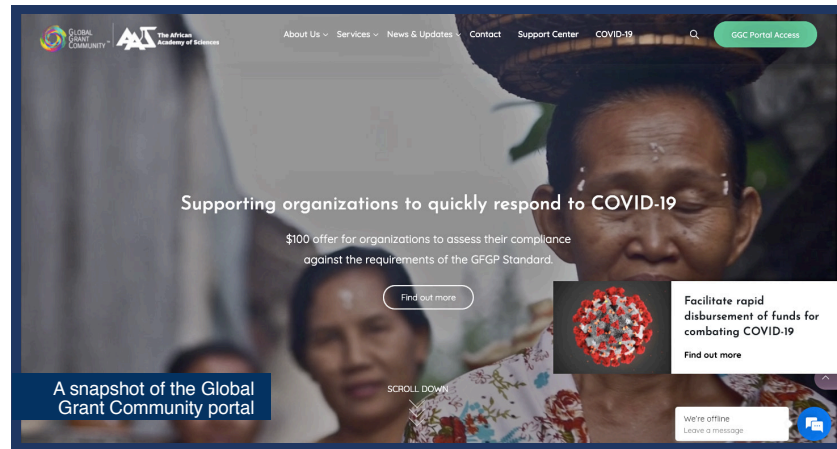
Researcher, Eric Ogola, applied for the Africa India Mobility Fund (AIMF). During his month in India, he worked with Dr Yogesh Shouche, the director of the National Centre for Microbial Resources. He says of his visit: "I was in India for one month. During this period, I had the opportunity to use and apply a number of modern diagnostic procedures and techniques, including Matrix Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF-MS) and Next Generation Sequencing (NGS). These techniques will be valuable in our proposed molecular laboratory at Jaramogi Oginga Odinga University of Science and Technology, Africa. I will be able to manage my research work better, knowing that I have a back-up of advisors that I can compare notes with. I hope to invite my collaborators over to Africa so that they can appreciate what we do and offer proposals that we can try out here."

Ogola is using cutting-edge genomic technology to identify genes responsible for antimicrobial resistance in children and their mothers.

Global Grant Community

The Global Grant Community is a platform of the AAS that provides, in a departure from other platforms and programmes of the Academy, a unique, self-supporting business model that promotes transparency and strengthens the governance of grant funding worldwide. By providing services that guarantee revenue generation – \$60,000 in 2019 – the GGC has proven that this is a scalable business model. The intention is to promote transparency and strengthen the governance of grant funding worldwide. The GGC offers three products:

- The Good Financial Grant Practice (GFGP) standard launched in 2018 for organisations of any size to rate their capabilities to manage funding. It does this by providing an online self-assessment tool covering four grant management practice areas —financial management, human resources, procurement and governance — adopted by the African Organisation for Standardisation (ARSO) to promote transparency in the use of funds by local organisations to mitigate the risk of fraud and corruption. In 2019, the AAS lobbied and received the approval of funders, such as the AAS, Wellcome, the Bill & Melinda Gates Foundation, UK Research and Innovation and the UK Department of Health and Social



Care, to allow GFGP-related costs to become an allowable expense on their awards. Discussions are ongoing with other funders to make the same allowance. This significant milestone will enable grantees to address the costly and difficult challenge of building grant management capabilities. The AAS has made a GFGP assessment mandatory for prospective grantees, and continues to raise awareness of GFGP through workshops, six of which were held in 2019.

- A portal-based pre-certification scheme to conform to the requirements of GFGP. Launched in the first quarter of 2019, it allows institutions to rate their capabilities to manage grants, in turn enabling them to become more attractive to funders and to help them identify areas requiring improvement. Conversely, the

portal allows potential funders to assess the capabilities of prospective grantees to manage grants. This resulted in the award of four licenses to certification bodies in 2019. Additionally, in preparation for a larger number of subscribers and users on the GGC portal, a Service Level Agreement was signed with PwC in July 2019 to introduce a GGC Help Desk to respond to technical and other queries from the community users. PwC is also contracted to provide a procurement-to-pay (P2P) process, which includes the processing of orders, invoices and receipts for subscription income.

- A global network of audit firms licensed to undertake site audits to certify that an organisation's day-to-day operational activities are in compliance with the requirements of the GFGP standard.



Our “one stop shop” for due diligence is revolutionising the global funding landscape by accelerating the grantmaking process and also ensuring it is transparent. | **Michael Kilpatrick, Senior Advisor for GGC**

Research Management Programme in Africa (ReMPro Africa)

The creation of the GGC exposed the need to address systemic gaps in the broad research ecosystem. While the GGC addresses financial governance, weaknesses in research management have persisted, and can be a hindrance to promoting quality science. In 2019, the Academy launched ReMPro Africa in response to a three-year consultative process with stakeholders, including university management from across the continent, and also undertook a study commissioned by the AAS and Wellcome which revealed that researchers funded by the AAS spent a disproportionate amount of time on administration. This often threatens the delivery, integrity and quality of research, which is why specialist research management services are needed to free up time for research. Designed to address systemic challenges at African institutions to create and sustain research environments that enable research to flourish, ReMPro Africa has four themes: embracing leadership, sustainable funding mechanisms, common standards and best practices, which support career development and training. In 2019, the programme raised about \$822,000, which increased total programme funding to \$1.4 M, enabling it to implement activities to drive its four priorities. For example, to serve the theme on common standards,

ReMPro is developing an innovative standard in Good Research Management Practice (GRMP) for African academic and research institutions to benchmark and improve their research ecosystems. Three consultative workshops were held with 75 participants from 53 institutions coming from 25 countries globally. Participants included leadership from research and academic institutions and representatives of funders and research management professional associations. These discussions have served as the basis for the initial framework for a GRMP standard. The standard in turn ensures that institutions effect policies and procedures for research integrity and governance, data protection and intellectual property and ethics, among other areas.

The AAS will engage ARSO to achieve technical harmonisation committees to review the first technical draft of the GRMP standard, targeted for completion in 2020.

ReMPro also contributed to the revision of the ESSENCE 5 Keys to research costing in low-and middle-income countries. Once completed, this initiative will provide tools for universities and research institutions to enact proper cost recovery. ReMPro Africa also co-created the International Research Management Staff Development Programme with the UK's Association for Research Managers and Administrators, which seeks to foster skills and cultural exchange between African and UK universities.



Participations at a ReMPro Africa workshop to develop the GRMP standard in Ghana in May 2019

Through ReMPro Africa, the AAS is working with institutions to create systems that support researchers who are carrying out cutting-edge research, efficiently and effectively. We must take steps now to build institutions capable of supporting researchers who can anticipate & respond to challenges quickly. | **Allen Mukhwana, Research Systems Manager**

Science Communication

In addition to spurring innovation, the Academy is determined to increase Africa's research output, which currently stands at 2.6% of global output, according to the UNESCO 2015 Science Report.

AAS Open Research

AAS Open Research (AASOR) is the first African publishing platform to adopt open peer review, publishing not just traditional research articles but also protocols, data sets and code, usually within days of submission and before peer review. Research output is indexed in abstract databases such as PubMed only after they pass review. The publishing platform is especially valuable for young African academics, who can face difficulties publishing in overseas journals. Studies suggest that research from low-income countries can be perceived differently from that performed in high-income ones, especially by editors, who have immense power over what gets published. The portal saves time and makes the review process more transparent.

In 2019, 29 scientific articles were published, of which 27 have passed peer review and are ready for indexing (AASOR passed scientific review for indexing by PMC in January 2020.) The most-viewed article (3,562 views as of year-end) was *Cancer in Kenya: types and infection-attributable. Data from the adult population of two National referral hospitals (2008-2012)*. New features launched in the year included a documents section, publishing outputs such as policy papers and abstracts that are not peer reviewed; 132 such documents were published over the year. Also introduced were Gateways, serving as portals for groups of specific interest including the African Society of Human Genetics (AfSHG) and the African Population Health Research Center (APHRC), DELTAS Africa and Connecting Minds Africa.

AAS Open Research has enhanced the visibility, transparency and accessibility of quality research in Africa. It serves not only as a platform the publication of peer-reviewed research articles, but also for the proceedings of conferences and timely scientific findings on threats. Elizabeth Marincola, AAS Senior Advisor

Nine African countries dominate submissions, with Kenya publishing the most, closely followed by Uganda and Ghana.

We believe that collaborations such as Gateways will not only directly serve the members of organisations dedicated to the advancement of science on and from the continent, but will also be key to propelling African researchers to worldwide visibility and leadership in the promotion of progressive publishing practices. Further provides opportunities for the non-scientific community of policy makers and media to have free access to knowledge that is vital in decision making and information sharing.

AAS Open Research has served to amplify the voice of African science in the important global discussion about the need to improve the equity, fairness, accessibility and measurement of research output. The Academy's endorsement of Plan S of the European Commission has proven to be a critical reinforcement of this international effort to battle the tyranny of entrenched publishing practices and reduce the barriers to research sharing, collaboration and data-based measures of impact.



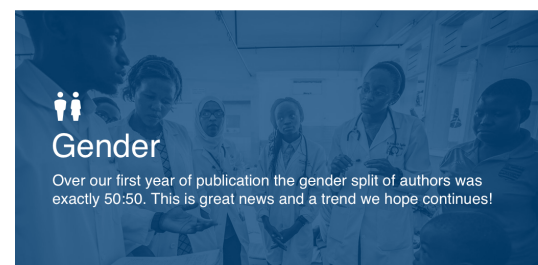
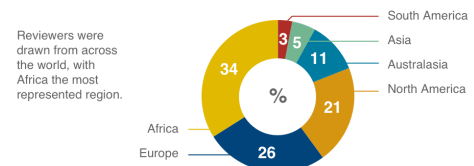
Impact

24,902
Total view

2,578
Total downloads



Article reviewer region



Programmes

Authors from across the AESA programmes were represented. Topping the leaderboard with 5 published articles was the THRIVE DELTA program.



In addition, 4 Fellows of the AAS and 4 Affiliates of the AAS have published their work on the platform.

The African Science Desk Journalism Awards Winners



Munyaradzi Makoni, second from right with senior journalists and mentors, and AAS and Bill and Melinda gates staff

Africa Science Desk (ASD)

Since September 2017, the AAS has been implementing a pilot of the ASD as a programme to improve the coverage of African science and to build the capacity of science journalists on the continent. Here, journalists from Kenya, Nigeria, Senegal and South Africa were invited to submit pitches, which were considered monthly through to January 2020. Successful pitches were funded producing TV documentaries, short web videos, explainers, short or long-form investigative reports and data stories aimed at local or global news markets. The pilot phase will be completed in March 2020 and the project's impact assessed through an

endline assessment conducted by an independent reviewer whose preliminary results are showing success in the publishing rate with an audience of over 58 M, mentorship model and the review process that provides feedback to applicants to allow them to re-pitch. These preliminary results are based on interviews, focus groups and surveys of grantees/journalists funded through ASD and a review of the ASD processes. The programme has also been instrumental in raising the profile of the AAS, showcasing its strategic goal to improve science by supporting the entire research ecosystem, including journalism. Through the ASD, we have widened our network of journalists and are tapping into these to improve science coverage in the media.



In promoting science communication, we are ensuring that science can gain and demonstrate value to society and in return mobilise support for its growth. As such our efforts are directed at training scientists to become ambassadors of the field, media engagement and reaching new and diverse audiences | **Juliette Mutheu-Asego, Head of Communications and PR**

Fostering a culture of entrepreneurship and innovation



AAS innovations and entrepreneurship pillar is robust with the developments currently seen under the Grand Challenges Africa program within the AESA platform. Nine scientific projects will be funded in 2020 to transition to scale to give their ideas the greatest chance to achieving impact. | **Moses Alobo, Programme Manager, Grand Challenges Africa**

Christine Musyimi, GC Africa (left) grantee speaking to a traditional birth attendant

Grantee story

Tackling depression among pregnant women

Pregnant women, who are particularly a risk group for depression — pre or post natal depression — but struggle to get treatment in Kenya, which has two mental health professionals for every 100,000 people. This innovation is led by Christine Musyimi, a mental health researcher and Head of Research Ethics and Scientific Publications Office at the Africa Mental Health Foundation in Kenya. It trained Traditional Birth Attendants (TBAs) to screen for depression in more than 1,700 pregnant women in under-resourced areas and has contributed to improving the mental wellbeing of mothers and ensured safe deliveries of their babies.

As research ecosystems are strengthened, science will grow beyond ideas and lab prototypes. The AAS values a culture of entrepreneurship and innovation, and Grand Challenges Africa puts innovation at the forefront. As internal coherence builds, grantmaking will be leveraged through a platform for all our grantees to translate their ideas or inventions into goods that generate economic and social value. Our goal is to ensure that all grantees tap into these resources, including:

- Providing seed and transition to scale grants to the continent's most impressive innovators. To drive this goal, the AAS develops, launches and manages Africa-specific Grand Challenges targeted at addressing big health and development challenges that are preventing African countries from reaching the SDGs. In 2019, GC Africa raised an additional \$6.5 M, to create total funding of \$28 M. This resulted in three new calls: the Data Science Approaches to Improve Maternal, Neonatal and Child Health in Africa, Maternal Neonatal & Child Health (MNCH) and

GC Africa- Joint Programming Initiative on Antimicrobial Resistance Since its launch in 2015, GC Africa has issued eight calls for proposals. In addition, it funded 36 new grantees in 2019 through the antimicrobial, drug discovery, MNCH, transition to scale and water, sanitation and hygiene schemes. This brings the total number of grantees in the programme to 53. ■ An e-Marketplace on which a community of practice that includes innovators, funders, governments, innovation incubators and other partners can have a secluded, safe, and confidential space to share ideas, exchange information, to support each other and plan for the success of innovative ideas. It is an interactive web-app and mobile application for users on Android and iOS ecosystems targeted at African innovators, funding organisations, philanthropists, governments and venture capitalists. An alpha iteration of the e-marketplace was tested internally in December 2019 with a beta iteration planned for release in 2020.

Science advocacy

Over recent years, the AAS has witnessed significant return on investment in scientific research in Africa. This includes our grantees attracting additional funding and reinforced the Academy's position as Africa's foremost grantmaking body. AAS-funded researchers continue to generate data and evidence that establishes them as experts and arms those advocating for science to engage potential funders and policymakers to drive the continental scientific agenda. These advocacy activities are: mainly those of the Coalition for African Research and Innovation (CARI), a platform of the AAS to build a highly coordinated, well-funded and African-led platform to improve systematic collaborations and scale up resources for African STI to achieve outcomes that would help more Africans lead better lives sooner.

For example, GC Africa is producing innovation that underpins a strategic partnership between the AAS and the World Health Organization. The partnership, marked by the signing of a Memorandum of Understanding between the two organisations in October 2019, is leveraging innovation to promote the broad availability of quality, safe, effective, affordable and sustainable high-impact interventions to benefit public health.

Other key international partnerships include the Water Research Commission in South Africa, the Chinese Academy of Sciences, the African Technology Policy Studies Network and the Programme for Appropriate Technology in Health (PATH), all of which exist to advance science, technology, innovation and strategic science advocacy on the African continent.

The AAS is also using its convening power to amplify the effect of scientists speaking collectively on issues of relevance, including through:

- The MNCH workshop, attended by 65 scientists, clinicians, policymakers and funders from 15 countries, where participants reviewed the current status of MNCH in Africa, developed strategies to accelerate the implementation of evidence-based tools, identified innovative solutions and reviewed approaches to support the growth of African

research leadership. The outcomes were consolidated into a report launched on International Women's Day, 9 March 2019.

- A partnership with the African Institute for Policy Development (AFIDEP), in which the Evidence Leaders in Africa (ELA) project, with \$638,811 in funding, seeks to expand the leadership of scholars and scientists through the use of evidence in policy formulation and implementation by African governments over a period of two years. This partnership enabled AFIDEP and the Academy to host a workshop to empower AAS Fellows and Affiliates to champion the use of innovation and evidence produced in decision making.

- The International Research for Development Funders Forum (IRDFF 2019), hosted in partnership with the UK Research and Innovation (UKRI), coordinated with the Science Granting Councils Initiative (SGCI) Annual Forum in November in Tanzania. Forum outcomes being consolidated will define mechanisms that funders can use to promote equitable research partnerships between the North and South.

- An Environment and Climate Change committee meeting held in July in Ghana to define Africa's position on this pertinent issue.

These meetings, combined with research outcomes from AESA programmes, have informed a scientific prioritisation exercise being implemented by the AAS and the AUDA-NEPAD Agency. This undertaking result in scientific white papers or position papers developed to guide Africa's Science, Technology and Innovation agenda toward projects that have the greatest potential to effect change, notwithstanding limited resources. Their implementation will be driven through the Empowering African Ownership of the African Research and Innovation Agenda to Accelerate Progress created to engage with Africa's science leaders to identify the top 10-15 scientific priorities that if addressed, offer the highest return on investment for Africa.



Our advocacy efforts in 2019 were geared to ensuring a continental scientific agenda driven by Africans and for Africans. | **Isavyani Naicker, Director of Strategy and Partnerships**



AAS Fellows at the AAS 11th General Assembly in South Africa



Our Fellows represent a pool of distinguished scientists whose expertise and participation in AAS activities is enabling us to realise our vision of transformed lives through science. | **Grace Mwaura, Fellows Manager**

Recognising scientific excellence

One of the strategic priorities of the AAS is promoting scientific excellence. We envision that as African scientists are funded through our programmes, their output will increase, creating more products and contributing evidence to policy, thereby gaining increased global recognition. The initiatives through which the AAS recognises this excellence include:

■ The AAS Fellowship, who are elected based on their publication record, demonstrated innovation, leadership roles and contribution to policy. Fellows provide strategic leadership to shape the AAS's programmes, engage with governments to enable wise scientific investment on the continent, serve as reviewers for AAS grant applications and as mentors to early career scientists. In 2019, the Academy

revised the nomination process for Fellows to allow existing Fellows to nominate candidates for Fellowship from outside of their own discipline. This is intended to lead to an increase in the number of Fellows in disciplines that do not receive sufficient recognition for their scientific excellence.

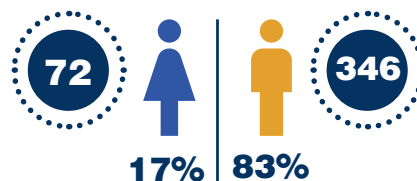
Fellow of the AAS are classified according to 10 fields of science namely: Agricultural and Nutritional; Biosciences; Chemical Sciences; Cultural Sciences, Humanities and Social Sciences; Engineering Technology and Applied; Mathematical Sciences; Geological, Environmental, Earth and Space Sciences; Medical and Health Sciences; Physical Sciences; and Policy.

The Fellows programme was also enhanced during the year by the launch of a portal for them to interact with each

other. Fellows and Affiliates were also invited to give scientific lectures to AAS staff and create scientific working groups that provide strategic guidance to the AAS. The AAS Fellows established 19 scientific working groups through which they will be contributing to science prioritisation initiatives.

■ The Affiliates programmes serves to identify, mentor and support early career professionals so that they develop into world-class research leaders. In 2019, the Affiliate nomination process was revised to allow for early career scientists to self-nominate, increasing applications from 100 to 300, resulting in a near doubling of the number of early career researchers competitively selected to join the existing network of from various African countries and across several scientific disciplines.

Snapshot of Fellows across Africa



The AAS Fellows Categories



Founding Fellows

34



Honorary Fellows

11



Associate Fellows

32



Fellows

461

Categories of Fellows

- Fellows are elected from among active African scientists residing in Africa or elsewhere
- Associate fellows are elected from among active and outstanding non-African scientists residing elsewhere or in Africa
- Honorary fellows are elected from persons of eminence who have made a significant contribution to the objectives of the Academy

KEY

■ Countries with AAS Fellows

■ Countries without AAS Fellows

Recognising scientific excellence

FELLOWS & AFFILIATES LIST

We give special thanks to Fellows and Affiliates who have advanced the work of the Academy by being involved in the delivery of these AAS activities:

The AAS Membership Advisory Committees (MAC) Members

The AAS Membership Advisory Committees (MACs) are key pillars of the African Academy of Sciences Fellowship responsible for reviewing candidates who have been nominated as Fellows and Associate Fellows. This is a significant process in the life of an Academy in order to identify the most outstanding scientists to join the Fellowship. The MACs serve two main purposes. First, they give recognition to deserving scientists, and this in itself gives those scientists a competitive edge in their endeavors in their chosen field of activity. Second, MACs enrich the AAS by selecting a wide pool of Fellows to engage in the tripartite mandate of the Academy.

There are 10 scientific disciplines from which Fellows of the AAS are selected from. All the disciplines have their individual MAC members.

Agricultural & Nutritional Sciences

Chair

Moctar Toure - Senegal

Biosciences

Chair

Chris Chetsanga - Zimbabwe

Chemical Sciences

Chair

Pieter Steyn S - South Africa

Cultural Sciences, Humanities & Social Sciences

Chair

Catherine Odora-Hoppers - Uganda

Engineering Technology & Applied Sciences

Chair

Tshilidzi Marwala - South Africa

Geological, Environmental, Earth & Space Sciences

Chair

Mohamed El-Ashry - Egypt

Mathematical Sciences

Chair

Norbert Hounkonnou - Benin

Medical & Health Sciences

Chair

Peter N. Mugenyi - Uganda

Physical Sciences

Chair

Shabaan Khalil - Egypt

Policy Sciences

Chair

David J. Bakibinga - Uganda

The AAS Scientific Working Groups

The AAS has 18 Scientific Working Groups (SWGs) that are made up of Fellows of the AAS who serves as Chairs and members of these groups. The groups advise on global and regional trends within their disciplines/thematic areas, lead discussions and/or advise the AAS on topical issues affecting or that could affect the continent, write policy briefs, assist the AAS to come up with strategies for the application of emerging technologies among other roles.

We list below the SWG Chairs. A full list of all members can be found on the AAS website under the Fellows page as follows <https://bit.ly/3gv1KQO>

AFRICAN SYNCOTRON INITIATIVE

Chair

Shabaan Khalil - Egypt
Physical Sciences

AGRICULTURE

Chair

Mohamed Mostafa El-Fouly - Egypt
Agricultural and Nutritional Sciences

ANTIMICROBIAL RESISTANCE

Co-Chairs

Iruka Okeke - Nigeria
Medical and Health Sciences
Sam Kariuki - Kenya
Medical and Health Sciences

BIG DATA

Chair

Mohamed-Slim Alouini - Tunisia
Engineering Technology and Applied Sciences

CLIMATE CHANGE

Chair

Abba Gumel - Nigeria
Mathematical Sciences

EDUCATION AND GENDER

Chair

Jane Catherine Ngila - Kenya
Chemical Sciences

ENVIRONMENT

Chair

Afwork Gebrekirstos - Ethiopia
Agricultural and Nutritional Sciences

EPIDEMIC PREPAREDNESS

Chair

Timothy U Obi - Nigeria
Agricultural and Nutritional Sciences

FOOD AND NUTRITIONAL HEALTH

Chair

Charles O. Nemma Wambebe - Nigeria
Medical and Health Sciences

HIV/TB

Co-Chairs

Alinah Kelo Segobye - Botswana
Cultural Sciences, Humanities and Social Sciences
Paul Nkwi
Cameroon
Cultural Sciences, Humanities and Social Sciences

HUMAN RIGHTS

Chair

Robin Crewe - South Africa
Biosciences

INTELLECTUAL PROPERTY RIGHTS

Chair

Barthelemy Nyasse - Cameroon
Chemical Sciences

MALARIA

Chair

Wilfred Fon Mbacham - Cameroon
Biosciences

MATERIAL SCIENCES

Chair

Kenneth Ikechukwu Ozoemena - Nigeria and South Africa
Chemical Sciences

MATERNAL AND NEONATAL HEALTH

Chair

Marleen Temmerman - Belgium
Medical and Health Sciences

MENTAL HEALTH

Chair

Bassirou Bonfoh - Togo
Agricultural and Nutritional Sciences

NANOTECHNOLOGY

Chair

Salah Obayya - Egypt
Engineering Technology and Applied Sciences

NON-COMMUNICABLE DISEASES

Chair

Eugene Sobngwi - Cameroon
Medical and Health Sciences

SCIENCE TECHNOLOGY AND INNOVATION POLICY

Chair

Oyewusi Ibadapo-Obe
Nigeria
Engineering, Technology and Applied Sciences

REVIEWERS & MENTORS

REVIEWERS

The AAS has close to a hundred reviewers who are African experts in their field of expertise and aid the Programmes to review applications and award rising African research leaders based on merit.

FLAIR Programme

FLAIR Round 1 Panel of reviewers/interviewers

FLAIR Steering Group

- **69th Lindau Nobel Laureate Meeting, AAS** - *Review of applications for the Lindau Nobel Laureate Meeting 2019*
- **Director for Strategy & Partnerships, AAS for UNESCO** - *Represent The AAS at the inception meeting of the UNESCO Chair in African Food Systems*
- **Postdocs programme** - *AAS Climate and the environment think tank meeting*
- **Clinical Trials Database** - *Stakeholder Engagement - Clinical Trial Lead Contacts*
- **Grand Challenges Africa**
Water, Sanitation and Hygiene (WASH) reviews
Maternal and Neonatal Health (MNH) Research priority setting – 2019
Transition to Scale Grant
MNCH Data and MNCH 3 call
- **AIMF Programme**
The AAS AIMF 2019 Panel of reviewers
- **70th Lindau Nobel Laureate Meeting, AAS** - *Review of applications for the Lindau Nobel Laureate Meeting 2020*
- **Affiliates 2019** - *Review of Applicants in 2019*
- **Wellcome**
- **CARI** - *Independent CARI Advisory Board (ICAB)*
- **Evidence Leaders in Africa (ELA)**
Evidence uptake workshop
ELA Conference Steering Committee
Research-to-Policy Communications Workshop

MENTORS

Mentors are experienced professionals from industry, academia, think-tanks, innovators, policy makers etc. with the ability and commitment to guide another person's career growth.

Ahmed Faheem Zobaa - Egypt
Engineering Technology & Applied Sciences

Mary Scholes - South Africa
Biosciences

Cato Thomas Laurencin - United States
Medical & Health Sciences

Catherine Kyobutungi - Uganda
Medical & Health Sciences

Assan Jaye - Gambia
Medical & Health Sciences

Sam Kariuki - Kenya
Medical & Health Sciences

Federico Rosei - Italy
Chemical Sciences

Kevin Marsh, - United Kingdom
Medical & Health Sciences

Eleanor N. Fish - Canada
Medical & Health Sciences

Nabila Bouatia-Naji - Morocco
Medical & Health Sciences

Judy Omumbo - Medical & Health Sciences
Kenya

Jane Catherine Ngila - Kenya
Chemical Sciences

Isaac Luginaah - Ghana
Geological, Environmental, Earth & Space Sciences

Nelson Torto - Botswana
Chemical Sciences

Charles Wambebe - Nigeria
Medical & Health Sciences

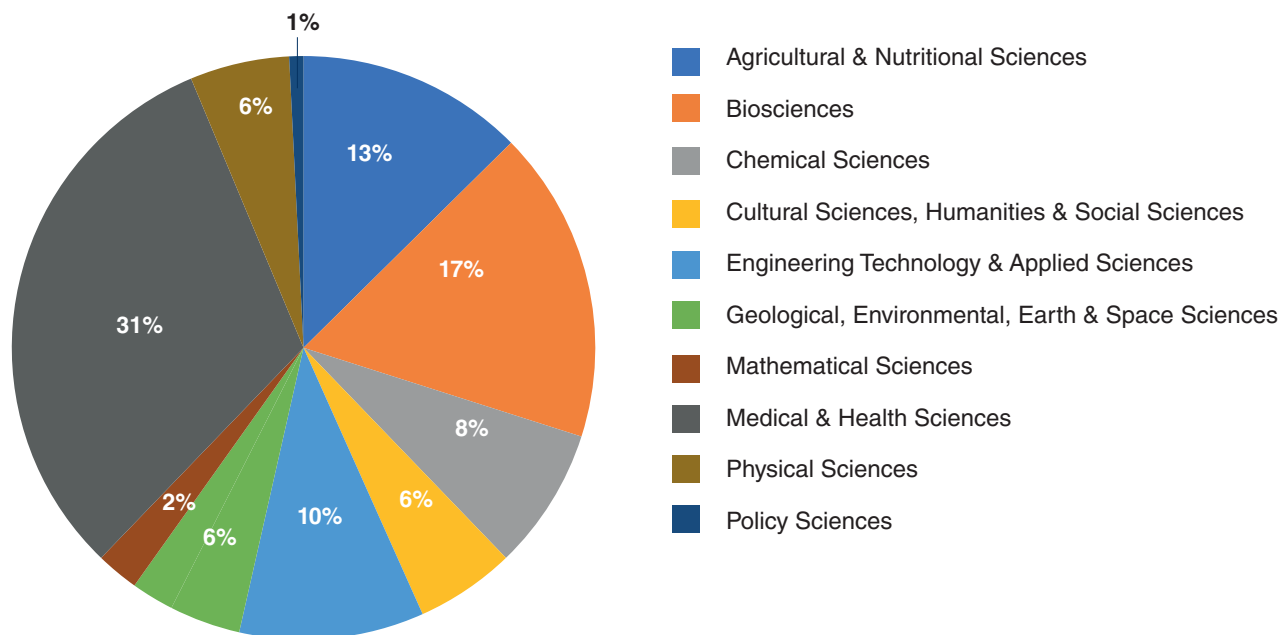
Hillary Inyang - Nigeria
Engineering Technology & Applied Sciences

George Fu Gao - China
Biosciences

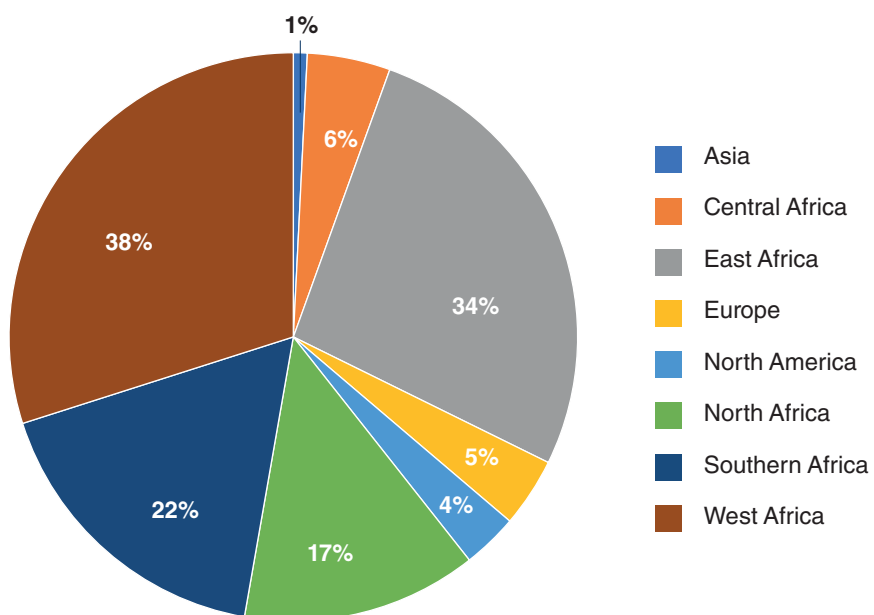
Khalil Ezzinbi - Morocco
Mathematical Sciences

Kwadwo Koram - Ghana
Medical & Health Sciences

Affiliates by AAS Scientific Clusters



Affiliates by Region




Strengthening internal coherence



The AAS staff from left Moses Alobo, Isavyani Naicker, Grace Mwaura and Deborah-Fay Ndlovu at a strategic retreat.

Internal activities are informed by the experience of our external programmes. The Academy added two Governing Council (GC) committees – the Governance and Nominations Committee (GNC) and the Programmes Committee (PC) to its already existing committee for finance, audit, risk and compliance (FRACC)– to improve GC oversight.

These committees assist the GC by recommending good governance principles and setting programmatic priorities. The GC is charged with reviewing and assessing the Academy’s programmes to ensure they are consistent with the priorities of the General Assembly. It also establishes policy and strategic guidance, as well as conducting the election of new Fellows, preparing the agenda for the General Assembly, reviewing and approving the selection of Affiliate members and appointing Academy auditors. The GC ensures all activities undertaken by the AAS are compliant with its regulatory framework and that compliance is reported to the NGO Coordination Board. Elections for a new GC are pegged for 2020.

 We accelerated efforts to create a learning enabling environment for staff to thrive and ensure that we achieve our vision of transformed lives through science. | **Rosemary Akinyi, Head of HR & Operations**

Also, in 2019, operational policies and guidelines were completed, facilitating processes and ensuring implementation of best practices in programme implementation and there was a change of the AAS land’s name from trusteeship to its own name.

In order to implement the Academy’s ever growing activities, AAS staff has grown to 64, including 11 new nationalities, an important indicator of success in mandating the Academy’s pan African-mandate. In addition, we noted a growth per job level as outlined below

| Job Levels | 2019 | 2018 |
|-----------------|------|------|
| Senior Officer | 2 | 2 |
| Senior Advisor | 3 | 3 |
| Temporary Staff | 2 | 2 |
| Director | 4 | 4 |
| Manager | 10 | 9 |
| Assistant | 21 | 16 |
| Officer | 22 | 17 |
| | 64 | 53 |

The Academy facilitates an environment where staff thrive and is in position to deliver the Academy’s mandate at the highest level of quality and integrity. Selected activities that serve this priority include training for staff to bolster job performance.

Future plans - An African STI Oasis

The AAS plans to establish an African-based STI Oasis to further accelerate its impact and support more scientists to develop their careers and ideas into products and to policies. The AAS sits on a five-acre piece of land that will allow for the construction of an expanded campus to provide:

- A revenue-generating campus bolstering the Academy’s independence and dynamic functioning through the research and innovation hub, learning spaces i.e. library, exhibition/museum spaces and conferencing and accommodation facilities
- An ecologically sustainable & technologically advanced future campus with world-class open collaborative team workspaces
- A museum to document and showcase the continent’s scientific prowess
- An idyllic setting for African researchers to take sabbaticals and explore interdisciplinary genial collaborations with peers.

We are inviting interested partners to connect with us to develop the future campus.

Financials

The AAS governance structure ensures that fiduciary oversight is adequately provided over the financial management. It consists of the General Assembly, Governing Council (GC) and GC committees.

The AAS General Assembly consists of all Fellows of The African Academy of Sciences. The General Assembly is the highest and ultimate decision-making governance organ of the Academy to which the Governing Council is responsible. It appoints the Governing Council, oversees election of Fellows and approves long-term plans of the Academy.

The AAS GC is the Board of Directors of the AAS. It consists of 11 members elected by the General Assembly. The President of the General Assembly is the Chairman of the GC. The GC exercises oversight on the AAS Secretariat directly as well as through its Committees. It establishes policies and provides strategic thinking.

The AAS FRACC (Finance, Risk, Audit and Compliance committee) of the GC assists the GC in fulfilling its conformance and performance responsibilities relating to; financial accounting practices and reporting, risk management, internal controls and internal audit, external audit functions and compliance with legal and regulatory requirements. It assists the GC in overseeing the management and execution of the Academy's strategic plan and is accountable for the achievement of the Academy's objectives. FRACC holds the primary function of directing of the Academy's investment portfolio on behalf of the GC. It also oversees human resource policies and practices.

The AAS GNC (Governance and Nominations Committee)

of the GC assists the GC in its governance stewardship and oversight responsibilities ensuring that the Academy is governed in line with best practices and in compliance with the Constitution of the AAS. The Committee establishes process of members joining the GC for consideration and possible approval; recommends to the GC corporate governance principles and policies applicable to the Academy; and vets and recommends to the GC individuals nominated to become members of the Academy.

The AAS PC (Programmes Committee) of the GC assists the GC in overseeing the AAS scientific programmes and is accountable for the achievement of the Academy's objectives. The committee assists the GC in carrying out its duties regarding the development and implementation of the Academy's programme activities, and is also responsible for ensuring the Academy has high level advice from individuals with significant expertise in each program managed by the AAS.

AAS undergoes rigorous due diligence process by funders to ensure that the existing control and assurance framework is robust enough to under-take grant management. Any issues identified are implemented within timelines and tracked by the legal and compliance team.

Income

The AAS source of income is drawn from grant funding at 95%, income from indirect charges at 3%, interest from the endowment fund at 1 % and other incomes at 1% which include fellow's subscription and interest income from current account.

| 2019 Income | USD | % Income Distribution |
|------------------------|----------------------|-----------------------|
| Grant Income | 35,095,437.00 | 95.50% |
| Endowment Interest | 393,748.00 | 1.07% |
| Management Fees Income | 951,092.00 | 2.59% |
| Other Incomes | 310,459.00 | 0.84% |
| | 36,750,736.00 | 100% |

Financials

Expenditure

The AAS expenditure just as the income reflects is made of 83% programmatic activities which include downstream funding to grantees at 74% and the 9% represent programmatic support activities. 9% represent personnel costs, with 85% of the staff costs covered as direct costs through funded grants and 15% covered by the management fees charged to grants. AAS has established a rigorous and transparent pre-award and post award grant management process of on boarding grantees. The management of funds is guided by the grant terms and conditions, internal and external audits and reporting requirements.

| 2019 Expenditure | USD | % Exp Distribution |
|-------------------------|----------------------|--------------------|
| Grantee Expenditure | 27,213,156.00 | 74.17% |
| Programmatic Support | 3,281,205.00 | 8.94% |
| Salaries and Wages | 3,386,286.00 | 9.23% |
| Administrative Expenses | 2,809,685.00 | 7.66% |
| | 36,690,332.00 | 100% |

Cost Recovery

Towards building its sustainability, The AAS in 2018 established a cost recovery policy which was approved through the governance structures. The policy determines the management fees that are charged on each grant, the management fees income is utilized to cover 15% of support staff and office running costs. This has enabled the AAS to re-invest part of the interest earned from the endowment fund.

The Endowment Fund

The endowment fund investment is guided through approved policies, its currently being invested through fixed deposits which earn interest between 9-10%. Income earned is used to cover governance and related costs, unutilized income is re-invested into the endowment fund.



We are striving for a financially robust Academy that can adequately and accountable support science on the continent to ultimately transform lives of Africans. | **Hannah Ngugi, Head of Finance and Grants**

AAS Governance & Strategic Thinking

About the African Academy of Sciences

The African Academy of Sciences (AAS) is a non-aligned, non-political, not-for-profit pan-African organisation the mission of which is to transform lives on the African continent through science.

Its tripartite mandate is to recognise excellence through AAS' highly prestigious fellowship and award schemes, provide advisory and think tank functions for shaping Africa's Science, Technology and Innovation (STI) strategies and policies, and implement key STI programmes to address Africa's development challenges.

The AAS recognises excellence through the election of AAS Fellows and Affiliates. The AAS also awards the Obasanjo Prize for Scientific Discovery and Technological Innovation every two years to an outstanding scientist who contributes to the development of the continent. The AAS Fellows are distinguished researchers who represent the most talented and promising men and women in and outside the continent, from over 59 countries across the globe. Fellows are Africans who may live in or outside the continent and working on science in Africa. Affiliates are promising early career scientists likely to become world class research leaders.

The AAS Strategic Plan 2018-2022



Our Partners

Our partners' generous investment and collaboration is enabling the AAS to achieve its vision of transformed lives through science. Our partners as of 2019 are:

Academic and research institutions and nongovernmental organisations

Drug Discovery and Development Centre (H3D)
European and Developing Countries Clinical Trials Partnership or EDCTP
Grand Challenges Canada
German University in Cairo (GUC)
National Institutes of Health
National Institute for Health Research
Medical Research Council (MRC), South African
Medical Research Council (MRC), UK
Medicines for Malaria Venture (MMV)
UK Research and Innovation (UKRI)
University of Edinburgh Tackling Infections to Benefit Africa (TIBA) Partnership

Academies

Chinese Academy of Sciences
Royal Society

Foundations and charities

Bill & Melinda Gates Foundation
Carnegie Corporation of New York
IKEA Foundation
Wellcome
William & Flora Hewlett Foundation

Governments, African and international agencies

African Organisation for Standardisation (ARSO)
African Union
African Union Development Agency-NEPAD (DFID)
Department of Biotechnology /Wellcome Trust India Alliance (India Alliance)
Republic of Botswana
Republic of Kenya
Department of Science and Innovation (DSI), South Africa
Republic of Nigeria
Department for International Development (DFID)
Federal Ministry of Education and Research, Germany (BMBF)
Institut Pasteur
Swedish International Development Cooperation Agency (Sida)
United States Agency for International Development (USAID)

United Nations agencies

United Nations Children's Fund (UNICEF)
United Nations Economic Commission for Africa (UNECA)
World Health Organization (WHO)

The AAS in numbers



462
Fellows



127
Affiliates



\$107 M
invested in
R&D



186
grantees



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