

The African Academy of Sciences

Strategic Plan 2013 - 2018

**A ROADMAP TO POSITIONING AAS
FOR BETTER IMPACT IN AFRICA**

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List of Acronyms

AAS	-	African Academy of Sciences
ACCFP	-	African Climate Change Fellowship Programme
AfDB	-	African Development Bank
AFORNET	-	African Forest Research Network
AMCOST	-	African Ministerial Council for Science and Technology
AMU	-	Arab Maghreb Union
ANSTS	-	Académie Nationale des Sciences et Techniques du Sénégal
AOSTI	-	African Observatory of Science, Technology and Innovation
ASTII	-	African Science Technology & Innovation Indicators Initiative
ATPS	-	African Technology Policy Studies Network
AU	-	African Union
AUC	-	African Union Commission
ACU	-	Association of Commonwealth Universities
CAE	-	Chinese Academy of Engineering
CAS	-	Chinese Academy of Sciences
CENSAD	-	Community of Sahel-Saharan States
CPA	-	Consolidated Plan of Action
D&I	-	Discovery and Innovation
EAC	-	East African Community
EC	-	Executive Committee
ECOWAS	-	Economic Community of West African States
ED	-	Executive Director
EDF	-	Environmental Defense Fund
EU	-	European Union
GA	-	General Assembly
GC	-	Governing Council
GDP	-	Gross Domestic Product
IAP	-	Inter-Academy Panel
IDRC	-	International Development Research Centre
INSA	-	Indian National Science Academy
IOCD	-	International Organization for Chemistry for Development
<i>icipe</i>	-	International Centre for Insect Physiology and Ecology
IFS	-	International Foundation for Science
IRA	-	Institute of Resource Assessment
JKUAT	-	Jomo Kenyatta University of Agriculture and Technology
KEMRI	-	Kenyan Medical Research Institute

KNAS	-	Kenyan National Academy of Sciences
KU	-	Kenyatta University
LMIC	-	Low and middle-income counties
LPA	-	Lagos Plan of Action
MC	-	Management Committee
MDGs	-	Millennium Development Goals
MoU	-	Memorandum of Understanding
NASAC	-	Network of African Science Academies
NCST	-	National Commission for Science and Technology
NEPAD	-	New Partnership for Africa's Development
NORAD	-	Norwegian Agency for Development Cooperation
OAU	-	Organization of African Unity
PTA	-	Eastern and Southern African Trade and Development Bank
RANDFORUM	-	Research and Development Forum
RECs	-	Regional Economic Communities
RISE	-	Regional Initiative in Science and Education
SADC	-	Southern African Economic Community
SIDA	-	Swedish International Development Agency
SRM	-	Solar Radiation Management
SRMGI	-	Solar Radiation Management Governance Initiative
ST&I	-	Science Technology and Innovation
START	-	Systems Analysis, Research and Training
STEM	-	Science, Technology and Mathematics Education
ST-EAP	-	Science and Technology – Europe Africa Project
SSA	-	Sub- Saharan Africa
TWAS	-	Academy of Sciences for the Developing World
TWAS-ROSSA-	-	Academy of Sciences for the Developing World Regional Office for Sub-Saharan Africa
UNDP	-	United Nations Development Programme
UNECA	-	United Nations Economic Commission for Africa
UNESCO	-	United Nations Education, Scientific and Cultural Organisation
USNAS	-	United States National Academy of Sciences
USAID	-	United States for International Development

Foreword

This Strategic Plan is a roadmap of AAS over the next five years, towards enhancing the role of the Academy as a key partner and leader in Africa's sustainable development.

This Plan outlines the interventions, programmes, activities and projected outcomes of AAS. It will also guide the relationship between AAS and its key stakeholders, who include the Academy's Fellows, partnering organizations and policy makers.

The priorities and strategies stipulated in this document are based on an analysis of the internal and external factors that affect the operations of AAS, which have been identified through wide consultations.

Internally, AAS intends to build on its past accomplishments, while strengthening its governance structure, to establish itself as an institution that responds to opportunities and challenges with determination and focus. Inspired by, and in tribute to the vision of the Academy's founding fathers, this Strategic Plan emphasizes the immense importance of creating a community of Africa's finest scientists towards advancing science, and science-led growth in Africa. Therefore, the Plan aims to strengthen the position of AAS as a fully multi-disciplinary academy, which is able to provide policy advice within the realms of natural, physical and social sciences.

Externally, the Strategic Plan is guided by an appreciation of the social, economic and political situation in Africa and beyond. In particular, the action plans outlined in this document are significantly anchored on initiatives instituted by critical stakeholders, for instance the African Union, Regional Economic Communities and other African and global organizations, towards addressing the continent's challenges. This Plan also sets the basis for future partnerships between AAS and financial institutions, for instance the World Bank, the Eastern and Southern African Trade and Development Bank (commonly known as PTA Bank) and the African Development Bank (AfDB).

Moreover, this Strategic Plan focuses on building on the time-tested and successful relationship between AAS and TWAS, The World Academy of Sciences. The Plan also outlines strategies for creating new partnerships with national, regional and international academies, towards addressing current and emerging global concerns, especially those affecting the developing world and Africa in particular.

Therefore, the AAS Strategic Plan, 2013 – 2018 is an investment in the Fellowship of AAS, the African scientists and producers of knowledge in general, and the future of the African continent.

The Plan prioritizes five key areas:

1. **Ensuring the Vitality and Sustainability of AAS:** by improving governance, establishing and enhancing partnerships, widening the Fellowship base, building on the asset base of AAS, and developing an effective communication system.
2. **Recognizing Excellence:** through the designation of the most exemplary scientists in Africa as Fellows of the Academy and by nurturing emerging African scientific talent, through the newly established Affiliate Membership Programme and mentorship programmes. AAS will also continue and strengthen its awards and prizes to recognize outstanding contribution by scientists working in Africa.
3. **Building Capacity in Science and Technology:** through capacity-building initiatives that seek to enhance region-specific competences in key topical areas including:
 - Water and Sanitation;
 - Sustainable Energy;
 - Food Security and Nutritional Wellbeing;
 - Health care and Wellbeing;
 - Science, Technology, Engineering and Mathematics and
 - Climate change.
4. **Developing Databases of Scientists and Scientific Organizations** which will consist of experts, as well as emerging researchers from Africa to make AAS a repository for expertise in areas of research and knowledge production.
5. **Engaging Governments and Policy Makers in Africa to Promote Science Technology and Innovation (ST&I)** by holding open, top-level, continent-wide forums, workshops, conferences and roundtable discussions on science and technology. These meetings will bring together grass-root activists, scientists and policy makers to discuss issues of common concern in settings designed to promote knowledge exchange and outcomes of collaboration.



1. Background

This Strategic Plan aims to ensure the efficient and effective delivery of programmes, activities and services of AAS, within the context of rapid changes taking place in Africa.

Between the 1980s and the 1990s, the African continent faced a myriad of social, economic and political challenges, as a result of what is now known as the African Crisis. Estimates by the World Bank show that from 1985 to 2005, the number of poor people in Africa doubled from 150 million to 300 million; more than 40% of the region's population.¹

This situation affected ST&I significantly. Although many African leaders recognised the critical role that science and technology could play in the continent's recovery, as evidenced by several declarations,² most of the recommendations made during that period remained largely rhetorical and unimplemented. For instance, the Lagos Plan of Action (LPA) – the primary response of the Organization of African Unity (OAU) and the United Nations Economic Council for Africa (UNECA) to the African crisis – proposed that all OAU member states should allocate 1% of their Gross Domestic Product (GDP) to science and technology. However, this goal was not accomplished.

Since the new millennium, the overall situation in Africa has improved considerably, and many countries in the continent have achieved modest success in economic development. According to *The Economist*,³ during the past 10 years real income per person in Africa has increased by more than 30%, in contrast to the previous decades when it declined by nearly 10%. The 2012 World Bank's *Global Economic Prospects* Report on SSA projects a 5% growth during 2012, up from 4.7% in 2011, with predicted further rises of 5.3% in 2013, and 5.2% in 2014⁴. In addition, by 2012, some countries in Africa had made considerable progress in achieving the United Nations Millennium Development Goals (MDGs). Further, over the past decade, the number of malaria associated death in some of the worst-

¹The World Bank, 2005. Meeting the challenge of Africa's development: a World Bank Group Action Plan. AFRICA REGION, The World Bank. September 7, 2005. (Updated as of September-26, 2005). http://siteresources.worldbank.org/INTAFRICA/Resources/aap_final.pdf

²The African (Banjul) Charter on Human and Peoples' Rights, 1981; Abuja Declaration on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases, 2001; AU 2003 Maputo Declaration on Agriculture and Food Security; Ouagadougou Declaration on Employment and Poverty Alleviation in Africa, 2004; Tripoli Declaration on the Elimination of Conflicts in Africa and the Promotion of Sustainable Peace, 2009; Bamako Declaration: Road Map for Africa's Climate Change and Biodiversity Strategies, 2010; the Millennium Development Goals (MDGs) and many more.

³The Economist, a special report "Emerging Africa", March 2nd 2013, p. 1-16.

⁴The World Bank, 2012. Global Economic Prospects Report: Managing Growth in a Volatile World. Vol 5, June 2012. Washington DC 20433. Available at: http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1322593305595/8287139-1339427993716/GEJune2012_Full_Report.pdf

affected countries have declined by 30% while HIV infection has decreased by up to 74%. Across Africa, life expectancy has increased by about 10% and child mortality rates in most countries have been on a downward trend.⁵

There have also been significant changes in terms of governance and the commitment by African leaders to pursue new priorities towards socio-economic development. In 2001, OAU was transformed into the African Union (AU), and alongside, a number of institutions aimed towards enhancing the continent's growth were launched. The most significant of these initiatives is the New Partnership for Africa's Development (NEPAD), which was established in 2002. The continents Regional Economic Communities (RECs) have also been working towards integration of the continent, mainly in trade.

Africa's rising economic growth, improved governance and the new institutions that have arisen, have all had positive impact on ST&I. For instance, in 2003, the African Ministerial Council on Science and Technology (AMCOST) was established under the auspices of AU and NEPAD, to serve as a high-level platform for developing policies and setting priorities on ST&I for Africa's development. In 2005, AU and NEPAD launched Africa's Science and Technology Consolidated Plan of Action (CPA), and gave AMCOST the mandate of providing political and policy leadership for its implementation.

Further, in 2007, the AU Heads of State dedicated their annual summit to science, technology and innovation. A key outcome of that forum was the re-affirmation of the commitments made in the LPA, in regard to the investment of at least 1% of GDP in research and development.

Despite the reasons for optimism, Africa continues to grapple with numerous development challenges, 50 years after many of its nations became independent. Old and emerging challenges continue to stifle the continent. For instance, diseases (such as malaria and HIV/AIDS) and climate change, which have been identified as the principal causes of poverty⁶ as well as conflicts in certain parts of the continent, are threatening life and livelihoods and compounding already complex challenges of food security, water, environment, energy and health. Indeed, as the 2015 deadline of the MDGs approaches, it is becoming quite clear that many countries in Africa will be unable to meet the set targets.

AAS believes that ST&I is a crucial component in the accomplishments that have been made so far in Africa, and that it will play a critical role in the present and

⁵Includes: Community of Sahel-Saharan States (CEN-SAD), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), Economic Community of Central African States (ECCAS/CEEAC), Economic Community of West African States (ECOWAS), Southern African Development Community (SADC) and the Intergovernmental Authority on Development (IGAD).

⁶World Hunger Education Service. 2012. "World Hunger and Poverty Facts and Statistics" available at <http://worldhunger.org/articles/Learn/world%20hunger%20facts%202002.html>

future challenges. For instance, it is easy to identify the critical role of ST&I in each of the 15 MDGs, include fostering access to knowledge; increasing productivity, industrialization, economic growth and the creation of decent jobs; promoting health and access to essential drugs; achieving food security through sustainable, equitable agricultural systems and by raising production and incomes, especially of smallholder farms; and promoting renewable energy technologies in order to respond to the dual challenge of reducing poverty while mitigating climate change.

Regrettably, the investment in ST&I in Africa remains low. By 2012, only three countries – Malawi, Uganda and South Africa – had fulfilled the 1% GDP allocation stipulation and are, as a result, on a path towards enhancing their scientific capacity.⁷ In most African countries, the budgetary allocations to ST&I range between 0.20% and 0.48%.

The AAS Strategic Plan, 2013 –2018, is therefore timely and critical: the next two years will be crucial for Africa, as the world enters into the conclusion and post-MDG phases. This Plan therefore positions AAS in a visionary position, where it can combine its past accomplishments and unique status as a continental academy of science, to play its rightful role in Africa's future.



⁷AU–NEPAD (African Union–New Partnership for Africa's Development) (2010), African Innovation Outlook 2010, AU–NEPAD, Pretoria. ISBN: 978-1-920550-45-5 available at: http://www.nepad.org/system/files/NEPAD_AIO_Executive_Summary_web.pdf

2. Overview of AAS

Since its establishment in 1985, AAS has pursued a vision of being an engine for ST&I-led sustainable development in Africa. The Academy's key strategy has been the utilisation of a community of excellent scientists to engage with governments and policy makers on the continent.

Despite these accomplishments, there is a general feeling that AAS has not performed to its full potential. Therefore, in the past two years, the Academy has gone through a process of critical self-evaluation and introspection, guided by its senior management organs, to identify and address some of the barriers that have hampered its functions and stifled its growth.

As a result, several decisions have been taken, setting AAS on a growth trajectory, which is expected to impact significantly on Africa's ST&I. In this Section, the current status of AAS is described, as a baseline for the strategic activities outlined in Section 4.

2.1 Governance and Structure

The governance structure of AAS comprises the General Assembly (GA), the Governing Council (GC), the Management Committee (MC) and the Secretariat.

The General Assembly: The GA is the highest decision making organ of the Academy, serving two critical purposes. First, it is at this assembly that members of the GC and other officers of the Academy are elected. Second, the meeting provides a forum for deliberations on issues of interest to the Academy.

The Governing Council: The 14-member GC meets at least once a year under the chairmanship of the President of the Academy. It formulates and reviews the programmes of the Academy. The GC also receives, examines and approves audited accounts. In addition, the Council receives reports from the Membership Advisory Committees and makes recommendations for the selection of new Fellows.

The Management Committee: The Management Committee is composed of the President of the Academy as its Chair, the Secretary General, the Treasurer and the Executive Director serving as the secretary in an Ex-Officio capacity. The Committee is responsible for the overall management of the Academy. It meets several times a year, on a need-to basis.

The Secretariat: The Secretariat of the Academy is responsible for the daily activities of the Academy. It is headed by an Executive Director and a staff of 17 (seven professional and 10 general service staff). The level of qualification of the staff has improved with the recent recruitment of a PhD level programme officer.

However, to meet the goals outlined in this Strategic Plan, the Academy needs to build its personnel capacity even further.

The Membership Advisory Committees: In 2011, the Fellowship recruitment process was reviewed and new guidelines and procedures instituted. In accordance, the membership of the MAC was reconstituted, creating eight committees representing: Agricultural Sciences, Biological Sciences, Chemical Sciences, Engineering Sciences and Technology, Environmental Sciences, Medical Sciences, Mathematical and Physical Sciences and Social Sciences.

The Programme Committees: Currently, AAS does not have programme-oriented committees of experts. The activities of the recently concluded AFORNET programme were overseen by its Board, while a programme coordinator and other staff took responsibility for the routine operations of the programme.

2.2 Accomplishments in Recognition of Excellence

The key objective of AAS is to:

Promote and foster the growth of the community of scholars in Africa by recognizing, supporting and enhancing excellence in the scholarly research undertaken by African scientists.

The Academy primarily achieves this goal through the appointment of exemplary scientists and scholars as Fellows, and through the presentation of prizes and awards to recognize outstanding contribution by scientists working in Africa.

2.2.1 Fellowship Status

AAS has four Fellowship categories: Fellows, Associate Fellows, Honorary Fellows and Affiliate Members.

By 2012, a total of 233 scientists from 36 African countries had been inducted as Fellows of AAS. The scientists are from: Algeria, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Egypt, Eritrea Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mauritius, Morocco, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, and Zimbabwe.

The Academy also has 12 Associate Fellows from outside Africa: three from India, two from the United States of America (USA) and one each from Denmark, England, Germany, Italy, and Pakistan. Among the Fellows of AAS are three Nobel Prize winners and nine women.

The Fellows of AAS represent a wide range of disciplines, including, medical sciences 39, mathematics 33, Biology 28, physics 23, Chemistry 23, Agricultural sciences 18, Geology/Environmental science 17, Engineering 14, Social sciences/humanities 10. Although there are a reasonable number of fellows in some disciplines, many such as ICT, climate science, nutrition, *etc* are under-represented.

Since 2000, AAS has been working with TWAS to identify young scientists in sub-Saharan Africa for appointment as TWAS Young Affiliates for a period of five years. This designation presents a number of opportunities for the appointees such as participation in AAS and TWAS conferences and mentorship support.

In August 2012, AAS revised its constitution to create an Affiliate Membership category, which enhances the Academy's ability to include young African scientists in its activities.

2.2.2 Prizes and Awards

Currently, AAS has four prizes and awards schemes, which the Academy either administers on its own or in collaboration with other organizations.

- **Olusegun Obasanjo Prize for scientific discovery and/or technological Innovation**, named after the former president of Nigeria, Chief Olusegun Obasanjo, is solely administered by AAS. The inaugural prize was awarded in 2011 to two South African scientists, Salim S. Abdool Karim and Quarraisha A. Karim, for their highly acclaimed work on the use of a microbicide, called Tenofovir gel, to prevent HIV infection and genital herpes in women. The event was presided over by Chief Obasanjo.

AAS administers two prize schemes jointly with TWAS:

- **The TWAS Regional Prize**, which is an annual prize that alternates around three thematic areas: (i) Public Understanding of Science/ Science Communication; (ii) Development of School Science Curricula/ Development of Scientific Educational Materials, and (iii) Building Scientific Institutions. Winners from each of the TWAS Regional Offices are announced during the annual TWAS General Meeting. The winners receive their prizes at an event organized by the AAS/TWAS-ROSSA office.
- **The Young Scientists Prize**, which is awarded through the TWAS-ROSSA office, honours young scientists who have made outstanding contribution in ST&I. The prize is awarded for promising scientific research that has made significant contribution to knowledge in the basic fields of science or has had significant technological impact in the applied fields.

2.3 Financial Status

2.3.1 AAS Endowment Fund

In 2002, AAS received ca USD 5 million from the Nigerian government, which the Academy used to establish an Endowment Fund. The money was originally banked with the Bank of Scotland in the United Kingdom. In 2008, the funds were transferred to Kenya, where they are now invested in three banks. Part of the interest earned from the investment is used to run the AAS Secretariat, while the rest is re-invested.

2.3.2 Grants

Over the years, AAS has received funds from donors and partner organizations for some of its activities. For instance, TWAS provides funds annually to AAS for the TWAS-ROSSA Prize for Young Scientists, the TWAS Regional Prize, Young Scientists' Conference, support to National Chapters of TWAS and the organization of an annual Public Lecture. In addition, TWAS provides AAS with small grants to support the Academy's secretariat in publication and information dissemination, travel expenses, and the purchase of office equipment and supplies

In 2011, AAS was part of a consortium that was awarded a €300,000 grant (with 10% of the amount coming to the Academy), under the DOCLINKS project titled, *Increasing Understanding and Establishing Better Links between African and European Doctoral Education Candidates*. The aim of this initiative is to engage Fellows and other African experts to create links and mentor PhD students in Africa.

The other partners in the Consortium are: the University of Botswana, the Association of Commonwealth Universities (ACU), UK; the European Council of Doctoral Candidates and Junior researchers (Eurodoc, Belgium), the French Speaking University Agency, Belgium; the Irish African Partnership for Research, Capacity Building, Ireland; University of Jyväskylä, Finland.

In 2012, AAS partnered with TWAS, the Royal Society and the Environmental Defense Fund (EDF) to engage various specialist groups in basic, applied and social sciences, as well as those in humanities, in different aspects of solar radiation management, relating to governance issues as well as exploring options to combat global warming. This initiative was funded by the Inter-Academy Panel (IAP) (\$45,000) and UNESCO (\$4500).

Additional sources of income include: sale of books, subscription to journals, and rent income from spare office space at the AAS Secretariat.

2.4 Infrastructure

AAS owns 5.3 hectare estate in Karen, a prime suburb of Nairobi. The Secretariat is housed in a building occupying a total of 1070 square meters. The building has a large reception area, 18 offices, a board room, a library and a cafeteria-cum-kitchen. It also has three modern committee rooms with moveable partitions, allowing the configuration to provide a large conference hall with capacity for 220 in a theater sitting arrangement and half that number in a classroom setting. In 2011, two international conferences were hosted using these facilities. The conference room has flip charts, projector screen, projectors, public address system, and plasma video screen. More conference chairs and tables, computers and accessories, and suitable accommodation facilities in the proximity of Karen would make these facilities more attractive for raising income to AAS by renting them to other organizations. The Academy has recently introduced a fiber-optic-based Internet, which enables fast Internet access. AAS also owns a pre-fabricated building (172 square meters) part of which is used for storage and the remaining is rented.

2.5 Communication

In April 2012, AAS appointed a full-time communications officer, who is responsible for generating information and publicity materials for the Academy. The Officer ensures timely and effective communication of information to Fellows of AAS, the scientific community and the general public.

The Secretariat is making great effort to communicate with its Fellows on a regular basis. Records show that only about 50% of the Fellows have corresponded with the Secretariat during the 18 months preceding the publication of this Strategic Plan.

Since the appointment of a Communication Officer, there has been significant improvement in terms of positive and accurate coverage of the Academy's activities. The Academy's website is now managed in a professional manner. Efforts are underway to acquire videoconferencing and related equipment to enhance the Academy's communication activities. Further, a proposal titled *Tools and Channels for Global Dissemination of Information* from AAS has been developed to utilize modern communication tools including the social media (Facebook, LinkedIn, Slideshare and Youtube) accounts. AAS is encouraging its Fellows and scientists across Africa and beyond to use these media to engage in the Academy's activities and contribute to the promotion of excellence in ST&I.

The Academy has two regular publications. The first is *Whydah*, a communication-style newsletter that contains general information on Academy's activities and on policy issues. 16 volumes of *Whydah* have been published since 1987.

The second publication is *Discovery and Innovation*, a peer reviewed journal published jointly by AAS and TWAS. 21 volumes of the journal have been produced since 1989.

AAS also produces several specialist works in the forms of books and monographs on key subjects of importance to Africa's development. So far, the Academy has published close to 50 monographs and books.

2.6 Capacity Building in ST&I

AAS is committed to improving Africa's capacity for management of research, development and public policy, by bridging the gaps between natural, applied and social scientists, the private sector and the government through the implementation of several capacity building programmes and projects. The activities conducted in line with this include the following:

2.6.1 AFORNET Programme

The African Forestry Network (AFORNET), was built on the success of the Capacity Building in Forestry Research (CBFR) in Africa, initiated by the AAS in 1991. The programme, which came to an end in 2012, focused on enhancing the utilization of human and institutional capacities developed by CBFR. AAS coordinated this continent-wide initiative through three nodes: Kenya, for eastern Africa; Tanzania for southern Africa and Ghana for West and central Africa eco-regions. According to its final report, AFORNET awarded a total of 222 thematic research grants, which supported the production of 236 Masters and PhD theses and the publication of over 300 papers.

2.6.2 Programme Fellowships

AAS was involved in the African Climate Change Fellowship Programme (ACCFP), which was designed to develop indigenous capacity in Africa for advancing and applying scientific knowledge for climate change adaptation. This goal was accomplished through fellowships to enable early and mid-career professionals and graduate level students to obtain relevant experience, education and training. ACCFP was financed by a grant from the International Development Research Centre (IDRC) through the international secretariat of the global Systems Analysis, Research and Training (START) in July 2007. It was executed by START in partnership with the University of Dar es Salaam and AAS.

AAS was also involved in the Regional Initiative in Science and Education (RISE), between 2007 and 2010, and The Science and Technology – Europe Africa Project (ST-EAP).

2.6.3 Nurturing Africa's Emerging Scientific Talent

AAS recognizes the importance of young scientists and continues to collaborate with partners in developing training programmes to enhance the capacity of young African Scientists. The programmes have focused on emerging areas of science and general aspects of scientific research, such as procurement and use of equipment scientific writing and application for research funding.

Between 2011 and 2012, AAS held two TWAS-sponsored conferences for young scientists. The first conference was themed *Exchanging Knowledge on Climate Change Impacts and Vulnerability in Africa: The Role of Networking*. The second was titled '*Climate Change and Food Security: The Road for Africa*'.

2.7 Contribution to Science-Policy Interface

AAS recognizes the crucial role of governments and policy makers towards the promotion of ST&I in Africa. The Academy has demonstrated its commitment to engaging with governments and policy makers through direct consultations and dissemination of information to them, through a variety of publications.

2.7.1 Partnerships with African Governments

AAS has made extensive efforts to bring scientists and policy makers in Africa together to promote ST&I as tools for development and addressing the continent's challenges. The Academy's most successful initiative in this regard is the Research and Development Forum (RANDFORUM), an initiative of the Academy's Founding President, Prof Thomas Risley Odhiambo. In 1992, Prof. Odhiambo created the '*Presidential Forum*', which brought together several African Heads of States to deliberate on the role that science and technology could play in addressing Africa's developmental problems. RANDFORUM facilitated top-level, continent-wide forums, workshops, conferences and roundtable deliberations bringing together grass-root activists, scientists and policy makers to discuss issues of common concern. Regrettably, this initiative has fizzled off in recent years. However, AAS will seek ways to revitalize it.

2.7.2 Partnership with African Union Commission

AAS is recognized by the African Union Commission (AUC) as an important partner in the development of ST&I in Africa. For instance, the Academy is currently a member of the working group mandated to review and update CPA, to provide a 10-year plan (2013 – 2023) for the development of Africa's ST&I needs. AAS is expected to contribute significantly to the implementation of CPA, in accordance to guidelines that will be stipulated by AUC. The Academy is also collaborating on a range of activities with other organs of AU, for instance the African Observatory of Science, Technology and Innovation (AOSTI) and the African Science Technology & Innovation Indicators Initiative (ASTII).

2.8 Databases of Experts and R&D Organizations

In line with the Academy's objective

to promote collaboration among African scientists and between them and the world scientific community,

AAS has produced three editions of *Profile of African Scientists* (1990, 1991 and 1996), and one book on *Profiles of African Scientific Institutions* (1992). However, AAS's activities in this regard have not been as strong as they should be in recent years. The Academy intends to re-launch these initiatives, as described in the Section 4.6.

In addition, the AAS Secretariat maintains a complete archive of the Academy's active Fellows in addition to a regularly updated, web-based, publicly accessible database containing their profiles.

3. AAS: Vision, Mission and Strategic Objectives

Vision

To be a **MAJOR** player in driving sustainable development in Africa through Science, Technology and Innovation (ST&I)

Mission

To mobilize the entire African science and technology community for sustainable development

Box 1: Strategic Objectives

Objective 1: To initiate programmes to guarantee the vitality and sustainability of the African Academy of Sciences;

Objective 2: To promote growth of the science community in Africa;

Objective 3: To improve Africa's capacity for management of Science and Technology for sustainable development;

Objective 4: To increase engagement with African governments and Policy Makers and other academies to promote Science, Technology and Innovation (ST&I) in Africa;

Objective 5: To enhance the capacity of African women and youth in the sciences;

Objective 6: To facilitate, coordinate and undertake the publication and dissemination of science and technological achievements in Africa.

4. Strategic Activities: 2013 – 2018

AAS intends to establish itself as a key partner and leader in Africa's social and economic growth through the design and implementation of the following strategic activities:

4.1 Ensuring the Vitality and Sustainability of AAS

AAS is a unique organization, an outcome of the farsighted vision of leading African scientists who recognized the critical role of trans-disciplinary knowledge and innovation towards the economic development and wellbeing of people in Africa. We believe that the dream of the founders of AAS will best be achieved by ensuring the vitality and sustainability of the Academy through the activities discussed below.

4.1.1 Improving Governance and Structure

AAS will improve its efficiency by reorganizing its structures (See Chart 1, page 14 and Chart 2, p. 37). The Academy will hold real and virtual meetings, more frequently, in order to improve its internal communication.

AAS will set up five regional offices for the Northern, Eastern, Western, Central and southern Africa, based on consultations with the regional officers and other stakeholders to determine the most suitable locations. The Academy will support these offices to play active roles in its functions. Committees consisting of four to five Fellows of AAS will be established in each region, headed by the respective Vice Presidents. Efforts will be made to integrate and synergize the activities of these offices with those of the TWAS-ROSSA chapter.

The MACs will be strengthened with further guidelines and procedures to make the Fellowship recruitment process more rigorous and efficient.

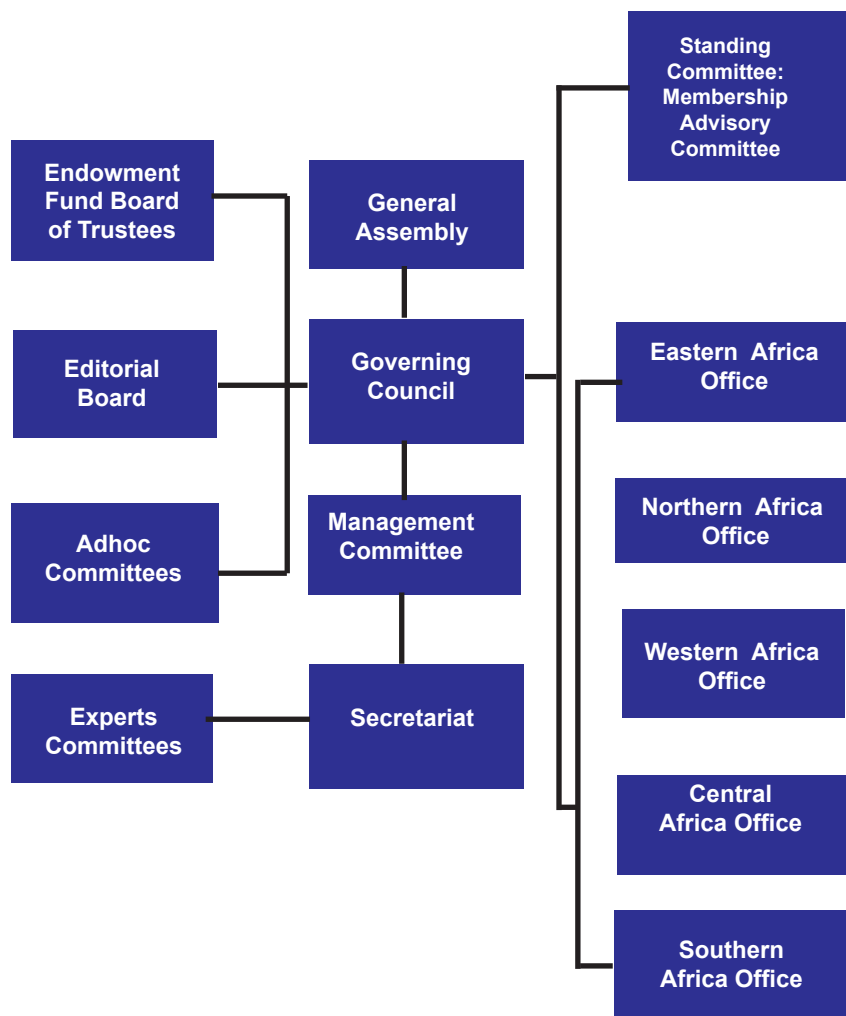
AAS will also set up Expert Committees to lead and advise on its programmes (See Section 4.4 for the specific areas). These Committees will be modeled on the AFORNET programme whose activities were overseen by a Board, while a programme coordinator and other staff took responsibility of routine operations.

4.1.2 Establishing and Improving Partnerships

Relationship with African Union (AU), its Member States and RECs

It is often said that national academies would function best by establishing links with their respective governments that are close enough to enable them to work

Chart 1: New Governance Structure of AAS



together, while also maintaining a critical distance to ensure their independence. Since AAS is a continental academy, it needs to be anchored to a continental political body. The obvious political entity that has a continental mandate is AU. Already, there are certain programmes of AU that benefit from strong partnerships with AAS. These are the NEPAD secretariat (currently AAS is involved in revising the CPA and is partnering in developing an S&T engagement direction 2013-2023), AOSTI, and the pan-African University. There are also a number of opportunities for AAS to enhance its future involvement in AU. In this regard, the most significant prospect is a recommendation made by AMCOST in November 2012, for the establishment of formal links between AU and AAS. AMCOST advised the AU to tap into the expertise of AAS, use the Academy as a think-tank capacity, assign it to undertake review as well as foresight studies, and involve it in the running of competitive prizes. AAS intends to strategically pursue the implementation of this proposal.

AAS will also establish partnerships with the RECs, *i.e.* the East African Community (EAC), the Economic Community of West African States (ECOWAS), the Southern African Economic Community (SADC), Economic Community of Central African States (ECCAS), Community of Sahel-Saharan States (CENSAD) and Arab Maghreb Union (AMU). Most of the RECs have already established S&T focal point offices and it will be these offices with which contacts will be made.

AAS is hosted in Kenya through an agreement with the Kenyan Government, which provides the Academy with certain privileges. AAS intends to discuss this agreement further, to secure additional rights and privileges accorded to other international organizations in Kenya. The discussions will also aim towards enabling more effective collaboration between AAS and Kenyan organizations. For instance, AAS intends to foster better collaboration with institutions in the country, including the Kenyan National Academy of Sciences, the National Commission for Science and Technology, the main universities and other organizations such as the Kenyan Medical Research Institute, the African Technology Policy Studies Network, *icipe*, *etc.*

Strengthening Relationships with International Partners

AAS will strengthen links with TWAS, the Network of African Science Academies (NASAC) and IAP, *etc.* AAS will also establish partnerships with national academies in Africa and those in scientifically advanced countries of the South, for instance Chinese Academy of Engineering (CAE), Indian National Science Academy (INSA), Korea Academy of Science & Technology (KAST), Brazilian Academy of Sciences (BAS), *etc.*

In the past, AAS has greatly benefited from its relations with several bilateral organizations, including Swedish International Development Agency (SIDA), International Development Research Centre (IDRC), Norwegian Agency for Development Cooperation (NORAD) and United States Agency for International Development (USAID), among others. AAS intends to renew and establish partnerships with these organizations. Some of the areas in which AAS intends to work with these organizations are described in Section 4.3.

AAS will also explore ways of partnering with the financial institutions and the private sector, particularly AfDB and regional banks (*e.g.* PTA Bank) and the World Bank. AfDB has been working throughout Africa during the last 40 years, and AAS notes with great interest the increasing engagement of the Bank in the higher education, health, nutrition and support to pharmaceutical sectors. AAS is also keenly following developments regarding the World Bank's African Centres of Excellence project. AAS will identify opportunities for involvement in the activities of these institutions.

4.1.3 Building on AAS's Asset Base

The founding fathers and the subsequent leaders have set AAS on a firm foundation by establishing an Endowment Fund, acquiring a vast estate (5.3 hectares) and a Secretariat building. AAS will continue to build on these foundations crafting an effective growth and management system, including:

- Establishing a Board of Trustees to invest, manage and grow the Endowment Fund. This growth will be achieved through a judicious investment plan that will plough back up to 25% of the accrued interest into the principal;
- Enhancing efforts to persuade more African countries to contribute to the Endowment Fund, by demonstrating the commitment of AAS to work with each of the member states through the Fellows and the respective national academy for the purpose of enhancing economic growth and development;
- Soliciting financial support from Fellows through fixed and voluntary contributions;
- Pursuing a vigorous programme of capital development using the sizeable estate that it has, for instance by working with partners to develop advanced facilities, such as auditorium and a guesthouse.
- Fund raising by various means which include:
 - Course fees from offering highly effective and popular capacity

enhancing courses – such as proposal writing, manuscript preparation skills, writing and presentation skills, ethical conduct of research, intellectual property issues, reviewing papers and proposals, *etc.*;

- Revenue from publications;
- Renting of extra space.

BOX 2: Summary of actions and guidelines for ensuring the vitality and sustainability of AAS

- Anchoring AAS to AU and the RECs and member states.
- Strengthening existing partnerships and creating new ones with other academies in Africa and elsewhere, bilateral organizations and financial institutions.
- Establish a Board of Trustees to ensure professional involvement in the investment of the Endowment fund.
- Vigorous fund raising activities through subscription, course fees, overheads, renting of extra space and facilities.
- Utilizing the Academy's prime property and substantial capital development through funding from regional banks such as AfDB, and partners.
- Discussions with the Headquarters agreement with the Government of Kenya.

4.2 Recognizing Excellence

Over the years, AAS has conducted its core mission of recognizing excellence effectively and efficiently. It is critical that the Academy enhances the standards that it has set so far. Therefore, AAS will increase and diversify its efforts to identify and honour exemplary scientists, along the four thrusts outlined below.

4.2.1 Widening the Fellowship Base of AAS

AAS plans to expand its membership to over 600 over the next five years, paying particular attention to gender balance, from the present 3% to at least 15% country and Diaspora representation.

AAS aims to have full Africa-wide representation. Therefore, AAS will pay particular emphasis to the recruitment of Fellows from 18 countries that are currently not represented in the Academy. In addition, the Academy will target to increase the number of Fellows from 11 countries where just one to three scientists have been appointed to the Academy.

In addition, AAS has a rather small number of fellows from the more scientifically advanced countries of Africa, for instance, South Africa, Algeria, Tunisia, Morocco, Tanzania and Ethiopia. The Academy will therefore endeavor to at least quadruple the number of fellows from such countries. AAS will also aim to increase the number of fellows in under-represented disciplines.

4.2.2 Adhering to the Highest Standards in Fellowship Recruitment

In its efforts to increase the number of Fellows, AAS will ensure that it utilizes the highest possible standards of excellence. Therefore, the Secretariat will provide its Fellows with clear guidelines to enable them nominate and referee potential Fellows. The nominations will be reviewed by qualified reviewers, in confidence, based on standardized guidelines. These recommendations will be further assessed by respective MACs, who will make proposals to the GC accordingly. All AAS Fellows shall be provided with profiles of the recommended candidates to enable them approve the new Fellows.

4.2.3 Affiliate Membership Programme

The Affiliate Members of AAS will be elected from among young promising scientists, who are 40 years of age or younger, who have demonstrated prowess in the development and application of science in Africa. Nomination of candidates for Affiliate Membership and review of their dossiers will be done at the respective five regional offices. The recommendations of nominees from each regional committee will be forwarded to the GC for approval. AAS will assist the regional offices to undertake this task smoothly and efficiently. These regional offices will forge strategic linkages with the various RECs. Efforts will be made to harmonize the recruitment of AAS affiliates with those of TWAS. AAS plans to identify up to 25 Affiliates per year. It is proposed that TWAS affiliates (of the TWAS-ROSSA programme) will be selected out of the wide pool of AAS affiliates by the year 2015 and thereafter. The aim is not only to recognize those that meet the high standards of AAS Fellowship, but also competitively identify young talents through the newly established Affiliates Membership Programme.

The efforts towards widening the membership base of AAS and adhering to the highest standards in recruitment will be greatly assisted by the regional offices.

4.2.4 Prizes and Awards

AAS will partner with like-minded organizations to recognize excellence through the award of prizes.

- The biennial **Olusegun Obasanjo Prize**, which was launched in 2011, set high standards in terms of the quality of the nominees and the rigor with which the evaluations were conducted. The next award of the prize will be made in 2013. AAS will continue to follow the same standards and make sure that only the most qualified candidates are awarded the prize.
- In partnership with TWAS, AAS will continue to award the TWAS Regional Prize and the **Young Scientists Prize**.
- The **Thomas Risely Odhiambo Leadership for Science Prize**: This is a tripartite prize established by TWAS, AAS and *icipe*. In 2012, officials from the three organizations agreed that the Prize would recognize leaders who have championed the cause of science in their institution or even country and region. The plan is that this prize should be given every three years. AAS will prepare a Memorandum of Understanding to obtain the formal commitment of the three institutions. The Academy will seek and motivate organizations to sponsor this prize.

BOX 3. Summary of actions and guidelines for Recognizing Excellence

- Fellowship recruitment will be conducted using the highest standards
- Young affiliates programme will be conducted in the sub-regions through AAS regional offices.
- The Olusegun Obasanjo Prize will be given in 2013 and in alternate years i.e 2015, 2017, *etc.*
- AAS, TWAS and *icipe* will launch the T.R. Odhiambo prize for Leadership for Science in 2014.
- Widening the Fellowship base to 600 by aiming for Africa-wide fellowship, more women (15%), more fellows from scientifically advanced countries of Africa and by target scientists in Diaspora.

4.3 Developing Effective Communication

AAS is now well set up to communicate effectively with its Fellows and all other stakeholders. AAS has instituted a wide-band, fiber-optic based Internet

communication that will allow fast communications, including fast uploading and downloading of data, and engaging in video-conferencing activities with programme committees, editorial board and regional offices.

AAS will strengthen established links with various media houses based in Kenya as well as other regions. The Academy will also ensure the regular production and distribution of *Whydah newsletter* and *Discovery and Innovation* journal. *Whydah* will continue to serve as a communication magazine for all AAS stakeholders. Its quality and relevance will be upgraded, and print and electronic copies of the newsletter will be produced and circulated widely free-of-charge. In regard to *Discovery and Innovation*, AAS and the Editorial Board will work with TWAS, towards positioning the journal as the first leading trans-disciplinary journal in the continent. The manuscripts of the journal will be processed in the office of the Executive Editor. The AAS Secretariat will be responsible for the production, subscription and distribution of the journal. AAS will look for partners to make the journal an open access publication.

AAS is now also active on the social media. The Academy intends to effectively use these media to engage all its Fellows and scientists all over the African continent and beyond.

4.4 Capacity Building in ST&I

One of the key objectives of AAS is:

to improve Africa's capacity for management of research, development and public policy by bridging the gaps between natural, applied and social scientists, the private sector and the government.

Towards this goal, AAS aims to implement a variety of capacity-building initiatives, along key emerging issues identified as the most critical to Africa's development through discussions with scientists in the continent and beyond, as outline below.

4.4.1 Nurturing Africa's Emerging Scientific Talent

AAS recognises that its future Fellowship will depend on how today's young scientists are nurtured. Therefore, investing in Africa's emerging scientific talent is investing in the future of the Academy and of the continent.

AAS will focus on mentorship for young scientists. Towards this goal, the Academy will continue to collaborate with TWAS to organize annual conferences for young scientists, where they will obtain mentorship from the Fellows of the two academies. These forums will also be an opportunity to raise the profile of young scientists and other top experts worldwide, as they will have a chance to

present their work. In addition, the Affiliates programme will contribute to the career development of young scientists

AAS will also provide young scientists with an opportunity to forge professional links with exemplary scientists and institutions in Africa and beyond. Towards this goal, the Academy has already instituted a partnership agreement with INSA, which will enable young scientists from Africa to conduct short-term (up to three months) research visits in top universities and research institutes in India. These visits will be utilized for pre- and post-doctoral studies in India. The Academy is also seeking similar arrangements with other academies from more scientifically advanced countries, for instance Brazil, China, Korea, *etc.*

The Academy also intends to enhance the communication skills of young scientists AAS by conducting courses on Proposal writing, Presentation skills, Manuscript preparation, Ethical conduct of research, Intellectual property issues, Reviewing papers and proposals, Procurement, Research performance evaluation, Mentoring, Biostatistics, Analytical skills, and other emerging areas of science. In the past, AAS has partnered with TWAS, the International Foundation for Science (IFS), AuthorAid, *Institut de Recherche pour le Développement* (IRD) and other organizations in offering such courses and will seek further collaboration to conduct this novel function. AAS will identify facilitators from its Fellowship and beyond to conduct these courses.

Inspired by previous requests from a Sweden-based applicant, AAS will also offer internships and host sabbaticals stays of staff from other organizations, to allow researchers to access the Academy's archives and databases, and to work on projects that are related to its programmes and activities.

4.4.2 Enhancing Region- and Issue-specific Competencies and Guidance

The critical concerns that are important for improving the human wellbeing in Africa are widely known and have already been articulated in several declarations. AAS has identified topical and emerging areas where it will work to build capacity and enhance competence of African scientists to address these challenges. The Academy will focus on the areas discussed below:

- **Water and Sanitation:** In 2010, the UN General Assembly recognised water and sanitation as a human right. Access to improved water and sanitation continues to be a major challenge in Africa, which has just 61% coverage for access to improved water, while 70% of the continent's population does not have access to improved sanitation⁸. Water is critical to sustainable development. In future, economic activities (agricultural and

⁸ Joint Monitoring Programme (JMP), 2012. Progress on drinking water and sanitation: 2012 Update. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. UNICEF and World Health Organization. Available at: <http://www.unicef.org/media/files/JMPReport2012.pdf>

industrial) and the combination of demographic trends and climate change will inevitably cause significant water constraints in some parts of Africa, especially those that already have low per capita water availability.

AAS has identified two sets of stakeholders that its Water and Sanitation Experts Committee will work with: groups involved in setting policy and research agenda for water and sanitation and practitioners engaged in the implementation of projects. The Academy will advocate for the generation and access to reliable data in water resources and water services; the development of an infrastructure for water and sanitation and the employment of new technologies to improve water delivery and management. AAS will also lobby for the adoption of sound traditional water management and conservation practices. The committee will also examine education curricula with the aim of contributing towards enhancing the application of modelling studies and the utilisation of credible scientific evidence in decisions related to water and sanitation.

- **Sustainable Energy:** Africa has enormous energy resources. Some are exhaustible, others are not. The continent's economically feasible hydropower potential is estimated at 45 gigawatts (GW). This is nearly one-tenth of the world's total. However, only less than 10% is currently being harnessed. The Rift Valley alone, covering ten African countries, has a geothermal potential of more than 15 gigawatts, enough to provide electricity for 150 million households.⁹ Among the inexhaustible resources is solar energy which is capable of meeting the continent's projected energy demand many times over. Therefore, theoretically speaking, Africa could produce 42 billion megawatt-hours, more than eighty times its current demand. Africa needs to develop and use its energy resources in a sustainable way. AAS is aware of the United Nations Sustainable Energy for all programme, which seeks to:
 - (i) ensure universal access to modern energy services by 2030;
 - (ii) double the global rate of improvement in energy efficiency and;
 - (iii) double the share of renewable energy in the global energy mix, by 2030.

Therefore, the Academy's expert committee on sustainable energy will generate and provide guidance on how Africa can develop and make

⁹Energy and the World Bank: The Facts. <http://climatechange.worldbank.org/content/energy-and-world-bank-facts#energy4> <http://www.tckctck.org/2012/04/Africa's-solar-power-potential/25985>

sustainable and optimal use of its energy resources. AAS has initiated discussions on energy issues with officials of the Chinese Academy of Engineering and hopes to develop collaborative programmes.

- **Food Security and Nutritional Wellbeing:** the two interlinked issues of food security and nutritional wellbeing remain Africa's most fundamental challenges. They are the basis for human wellbeing as well as economic growth. African governments have been grappling with these two issues for a long time. Several studies have shown that different macro- and national-level factors, including policies, greatly influence and will continue to influence the achievement of national food security and individual nutritional well-being. The cause-and-effect issues associated with food and nutrition are complex. However, a major factor is low agricultural productivity primarily caused by insect pests, lack of adequate water, and poor soils and seeds. Other constraints to food security include rapid population growth and urbanization, environmental degradation, and diseases such as malaria and HIV/AIDS, which take a great toll on manpower. AAS will aim to improve agricultural yield and nutrition by endeavouring to understand the underlying problems as well as the policies that are necessary, to enhance the capacity of nations in Africa to feed current and future generations.
- **Healthcare and Wellbeing:** African nations need to invest wisely in areas that can guarantee better health and wellbeing for the population. Currently, the labour loss due to malaria in Africa is estimated at about USD 12 million per year. These losses are exacerbated further by HIV/AIDS, TB, non-communicable diseases and other neglected tropical diseases. Therefore, investing in health will provide returns in economic development and the reduction of poverty in Africa.

Africa needs to identify the best ways to address issues of access to quality affordable medicine and healthcare. The continent must ensure that public health and medical education are designed and enabled to train the right kind of professionals to address these issues. Indigenous knowledge in health practice needs to be modernised and upgraded. In this regard, plenty of lessons could be learnt from India and China. Nanosciences, biotechnology, ICT, cell and gene therapy offer new, simpler and innovative opportunities to tackle health problems that affect the continent.

Besides advising on policy matters, AAS will collaborate with experts in scientifically advanced countries of the South, for instance Brazil, China and India, to train young people in some of the frontier fields and to transfer some of the innovative technologies.

- **Science, Technology, Engineering and Mathematics:** During the First African Forum on ST&I, held in Nairobi in 2012, African Ministers and science experts issued the Nairobi Ministerial Declaration outlining resolutions to promote and strengthen science, technology and innovations; including a pledge to support and integrate ST&I policies, strategies, programmes and action plans in national and continental agenda. ST&I can be strengthened by improving science, technology and mathematics education (STEM), enhancing scientific research and ensuring that higher education systems are equipped to meet the demand for STEM education. In regard to education in basic sciences, AAS has partnered with the International Organization of Chemical Sciences for Development (IOCD) to undertake a project, which proposes to enhance science education in low and middle-income countries (LMIC) in Africa. Practical laboratory work is often extremely limited in science courses due to poor availability of equipment, chemicals, laboratory facilities and scientific libraries. The project involves design and implementation of low cost laboratory experiments in biology, chemistry and physics in African universities. AAS will establish an expert Committee on STEM which will also guide and oversee the activities of the Microsciences project.
- **Climate Change:** Africa's increasing vulnerability to the impacts of climate is well documented. These impact are being felt across Africa and its various segments of livelihoods. Increasing periods of no or low rainfall in some places and significantly changed rainfall patterns is causing shifts in crops and farming practices, further complicating agricultural challenges, thereby increasing food insecurity and poverty. Rising temperatures are causing the spread of diseases such as malaria, resulting in more expenditure on health, loss of labour and even lives. Excessive flooding is destroying lives and property. All sectors of development in Africa are being heavily impacted by climate change as the continent attempts to find the needed resources to address these issues. Therefore, AAS will implement a programme on climate change to build the necessary human resource capacity to effectively address vulnerability, adaptation and mitigation challenges in Africa. AAS has a wide range of experts among its Fellows that will be relied on to develop relevant programmes and strategies and provide the academic leadership such as studies on the financial cost of climate change mitigation and adaptation as well as develop training programmes for Africa's climate change negotiators. AAS has in the past partnered with organisations such as START, the Institute of Resource Assessment (IRA) at the University of Dar es Salaam in developing the human resources needed in addressing the issues of climate change through the African Climate Change Fellowship Programme

(ACCFP). AAS shall, therefore, build on its expertise and experience to establish a network that will make a meaningful contribution to Africa. AAS will also continue its leadership role in exploring the possibilities of Solar Radiation Management to mitigate the effects of climate change. We will develop our partnership with the SRMGI and position ourselves to be able to give advice for the development of evidence-based policy for Africa. The academy has already been asked to form an expert committee on Solar Radiation Management (SRM) in Africa.

The expert committees proposed for each of the activities discussed above will consist of Fellows of AAS and other experts based in Africa and in the Diaspora. The committees will guide and oversee the activities of the Secretariat in the respective areas. They will also prepare reviews of existing situations (or take responsibility for such undertakings), and undertake forecast studies. AAS will use the information generated by these committees to give advice to governments as well as regional bodies.

In addition, AAS and TWAS-ROSSA will hold at least one conference per year, in collaboration with other partners, including other regional offices of TWAS. The themes of these conferences will revolve around the strategic areas listed above.

BOX 4. Summary of actions and guidelines for Capacity Building

AAS will:

- Set up Expert Committees on key strategic programmes.
- Accelerate the growth and development of databases of scientists and scientific organizations.
- Conduct at least two capacity enhancing training programmes.
- Engage in policy discussions with AU, RECs and member nations.

4.5 Engaging Governments and Policy Makers in Africa to Promote ST&I

AAS has been a key proponent of regional integration and has always recognized the role of enlightened leadership in promoting ST&I in Africa.

In November 2011, the former President of Nigeria, Chief Olusegun Obasanjo, while inaugurating the new AAS secretariat building in Nairobi observed:

“AAS should be seen as it is; an instrument of African scientists of no mean caliber that can make contributions to our development in Africa and it should be used..... Please let us make use of AAS and all its facilities, particularly in terms of its human capital....”¹⁰

AAS will, therefore, hold open, top-level, continent-wide forums, workshops, conferences and roundtable discussions on science and technology. These meetings will bring together grass-root activists, scientists and policy makers to discuss issues of common concern in settings designed to promote better understanding. AAS will strive to create discussion platforms where research and information facilitate policies. In turn, these policies should develop relevant and quality science. AAS will set up task forces that can develop African perspectives to global issues, prepare technology foresights, and so on.

AAS will also work with NEPAD and other AU initiatives, as well as RECs to articulate ST&I policies and programmes at continental, regional, national and institutional levels. The Academy will engage in discussions on issues pertaining to the establishment of ST&I institutions, funding of R&D, capacity building as well as the integration of science and technology into national visions and agenda. AAS will also assist in developing mechanisms for implementation, monitoring and formulating indicators of successes. The Academy will work with the appropriate organs of the AU to advocate and maintain momentum on the allocation of 1% of GDP as stipulated in the LPA, as per the decision of the African Heads of States during their annual summit in 2007.

4.6 Developing Databases of Experts and R&D Institutions

To meet its objective of promoting ‘*collaboration among African scientists and between them and the world scientific community*’, AAS intends to build on its past efforts towards becoming a repository and one-stop source of information on Africa’s scientific expertise. The Academy will continue to produce *Profile of African Scientists* and Profiles of African Scientific Institutions, using the its own resources and invite partners to collaborate with it. The information produced through these efforts will assist AAS to mobilize African experts and setup task forces, to undertake reviews and provide evidence-based advice to African governments. AAS will also digitalize all previous publications and make them available to potential users, either free of charge or on subscription depending on the purpose for which therequested information is intended.

¹⁰H.E. Olusegun Obasanjo. http://www.youtube.com/watch?v=bi_oYin1QN8I

5. Implementation, Monitoring and Evaluation

5.1 Logical Framework

Overall goal: To position the African Academy of Sciences for better impact throughout Africa, to strengthen science and technology capacity for sustainable development, and to contribute to global knowledge.

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
5.1 To initiate programmes to guarantee the vitality and sustainability of the African Academy of Sciences (AAS)	Improving Governance and Structure <ul style="list-style-type: none"> - Hold frequent real and virtual meetings; - Establishing regional offices; to run Affiliates programmes, to link to various RECs; - Strengthening Membership Advisory Committees; - Setting-up Programme Committees of experts; 	<ul style="list-style-type: none"> - More frequent Meetings; - Affiliates elected; links with RECs formed; - Timely completion of review of nominees; - Implementation of Effective programmes; 	<p>On-going</p> <p>2013</p> <p>2013</p> <p>2014</p>	<ul style="list-style-type: none"> - Minutes - Reports from regional offices - Annual reports - Annual reports 	<p>RECs would be receptive</p>

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
	Establishing and Strengthening Partnerships, <ul style="list-style-type: none"> - The AUC and RECs; - Kenyan government and organizations in Kenya (e.g. NCST, ATPS, <i>icipe</i>, <i>etc.</i>); - Academies (KNAS, EAS, GAAS, INSA, CAE, <i>etc.</i>); - AfDB, World Bank and other financial institutions. 	<ul style="list-style-type: none"> - Increased involvement of AAS in AUC and REC activities; - Signing of MoUs, launch of joint projects - Ditto - Ditto 	2014 2013 2013	<ul style="list-style-type: none"> - MoUs and lists of projects - Ditto - Ditto - Ditto 	<ul style="list-style-type: none"> - AUC and RECs will be receptive to the AMCOST recommendation
	Building on AAS's Asset Base <ul style="list-style-type: none"> - Establishing Board of Trustees to invest, manage and grow the Endowment Fund - Get more member states to contribute to the Endowment Fund - Enhance financial inputs from Fellows to the Endowment Fund 	<ul style="list-style-type: none"> - Implementation of the Deeds; - Growth of Endowment Fund by 25%; - Launch campaign to get Fellows to contribute; 	2013 2013	Annual reports Investment reports - Bank statements;	Nations contribute

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
5.2 Recognizing Excellence	<ul style="list-style-type: none"> - Organize capacity enhancing training courses at a fee; - Publication of journals and newsletters; - Capital development – conference facilities, guesthouse, <i>etc.</i>; - Overheads from grants, consultancy, review studies 	<ul style="list-style-type: none"> - Two course offerings annually; - <i>Whydah</i> and D&I to appear quarterly; - Develop capital development plans; - Regular income to AAS of ca \$50,000 	<p>Annual</p> <p>Annual</p> <p>2015</p>	<ul style="list-style-type: none"> - 50 scientists trained - Publications - Reports - Annual reports 	Grants will be obtained
	Widening Fellowship Base <ul style="list-style-type: none"> - Get more Fellows from countries with high scientific activity, and from under-represented disciplines; - Recruit Fellows from non-represented African countries; - Admit more women into Fellowship. 	<ul style="list-style-type: none"> - Full Africa-wide representation of 600 Fellows; - Correlation of numbers with scientific performance - Women Fellows make up at least 15% 	<p>5 years</p> <p>5 years</p> <p>5 years</p>	<ul style="list-style-type: none"> - Annual reports - Quantitative review of fellowship - Review of fellowship 	

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
	Adhering to the Highest Standards in Fellowship Recruitment - Develop procedures that result in the recruitment of only the very best in the field.	- Outstanding persons become AAS Fellows	Annual Activity	-Qualitative review of fellowship	
	Affiliate Membership Programme - Nomination and review of affiliates at each of the regional offices.	- Appointment of 25 affiliates per year	On-going Activity	-Annual reports	
	Prizes and Awards - Olusegun Obasanjo - T. R. Odhiambo Prize - TWAS Regional and Young scientists	- Awarding of prize - Awarding of prize	Alternate Years Alternate year Annual	- Annual reports Annual reports Annual Report	<i>icite</i> and TWAS support TWAS sponsorship
	- Production and distribution of <i>Discovery and Innovation, and Whydah</i> ; - Work towards making <i>Discovery and Innovation</i> a fully open access journal - Strengthen and create links with the media; Maximize use of social media;	Publications appear on schedule; - Increased profile of AAS and activities in the local and international media;	Regular On-going	Publications Media Reports	Support from partners

5.3 Developing Effective Communication System

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
5.4 Capacity Building in ST&I	Nurturing Africa's Emerging Scientific Talent: <ul style="list-style-type: none"> - Mentorship of young scientists - Annual conferences for young scientists - Short research visits through bilateral agreements with partners (India, Brazil, China, <i>etc.</i>); - Capacity enhancing skill courses; - Offer internships and host sabbatical stays 	<ul style="list-style-type: none"> - Survey; - Conferences; - # of participants, reports; <p>Number of research visits;</p> <p>Course materials;</p> <p>No. of interns, reports;</p>	<p>On-going</p> <p>On-going</p> <p>On-going</p> <p>ongoing ongoing</p>	<p>Reports;</p> <p>Abstracts;</p> <p>Reports;</p> <p>Evaluations;</p> <p>Reports.</p>	<p>Availability of sponsorship</p>
	Enhancing Region- and Issue-Specific Competencies and Guidance: Water and Sanitation <ul style="list-style-type: none"> • Setting up Expert Committees; • Interacting with researchers and implementing agencies; Promote innovative technologies to improve water delivery and management 	<p>Calls for reliable data in water resources and water services;</p>	<p>1-5 years</p> <p>1-5 years</p>	<p>Reports;</p> <p>Policy briefs;</p> <p>Conference abstracts and recommendations</p>	<p>Collaboration with TWAS and TWAS-ARO;</p> <p>Sponsorship from funding agencies</p>

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
	<ul style="list-style-type: none"> Engaging policy makers in discussions, at national regional and continental levels; Review educational curricula generate credible scientific evidence to support decisions related to water and sanitation. Organizing Conferences, and holding ministerial panel discussions 	<ul style="list-style-type: none"> Recommendations on the development of infrastructure for water and sanitation Conference recommendations 	<p>1-5 years</p> <p>1- 5 years</p>	<p>Reports; Policy briefs; Conference abstracts and recommendations</p> <p>Conference reports</p>	
	<p>Sustainable Energy</p> <ul style="list-style-type: none"> Establish expert committees in sustainable energy from among its Fellows and other experts in Africa and the Diaspora; The expert committees will guide and oversee activities of the AAS Secretariat with regard to sustainable energy; Conduct review of existing situations and foresight studies; Generate and disseminate advice to governments as well as regional bodies; Hold one or two conferences on this theme. 	<ul style="list-style-type: none"> Review and advise on how Africa can develop and make sustainable and optimal use of its energy resources. Promote developing new and efficient energy; Assessment of the effectiveness of enterprises and regulatory institutions in the energy sector; Conference recommendations. 	<p>1-5 years</p>	<p>Reports; Conference abstracts</p> <p>Recommendations</p> <p>Conference Reports</p>	<p>CAE and other Suitable co-laborators and sponsor will be identified.</p>

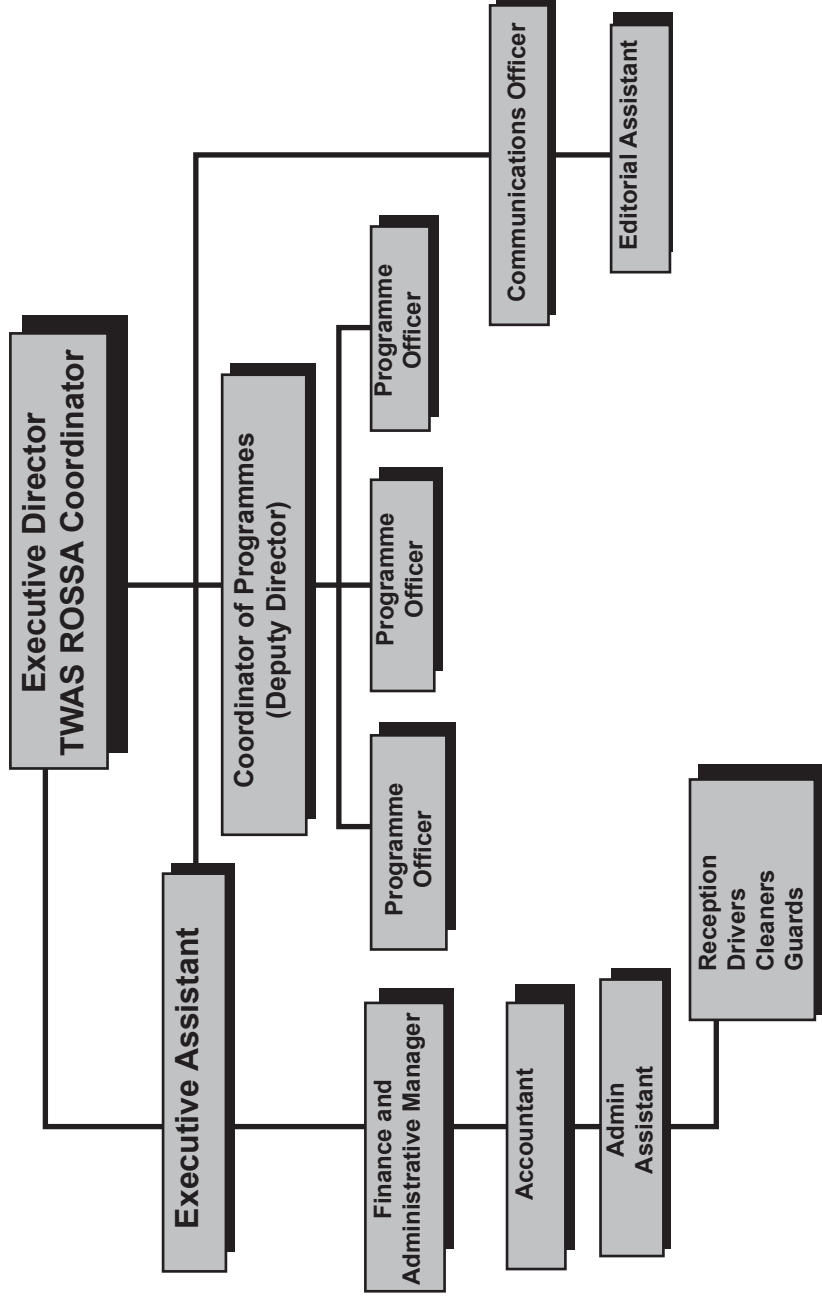
Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
	Food Security and Nutritional Wellbeing <ul style="list-style-type: none"> Identify experts among AAS Fellows and others in Africa and the Diaspora, who are well versed in food security and nutritional wellbeing to constitute the AAS Expert Committee; Preparation or guidance of reviews of existing situation and foresight studies; Hold one or two conferences on this theme. 	<p>Committee set up</p> <p>Proposals for funding</p> <p>Conference recommendations.</p>	1-5 years	<p>Reports;</p> <p>Policy briefs;</p> <p>Conference abstracts and recommendations;</p> <p>Conference Reports</p>	<p>Suitable collaborator and sponsor will be identified.</p>
	Healthcare and Wellbeing <ul style="list-style-type: none"> Establish expert committees in healthcare and wellbeing from among its Fellows and other experts in Africa and the Diaspora; Preparation or guidance of reviews of existing situation and foresight studies; Prepare and disseminate advice to governments and regional bodies; 	<ul style="list-style-type: none"> Assessment of the relevance of public health and medical education; Modernization and upgrading of indigenous knowledge in health practice; Promotion of nanosciences, biotechnology, ICT, cell and gene therapy; 	<p>1-5 years</p> <p>Reports</p> <p>Policy briefs</p>		<p>Collaboration with INSA, CAE, BAS.</p>

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
	<ul style="list-style-type: none"> • Work with other South academies to give short term training to young health professionals; • Hold one or two conferences on this theme. 	Conference recommendations.	1-5 years	Conference Reports	
	Science, Technology, Engineering and Mathematics (STEM): <ul style="list-style-type: none"> • Establish expert committees in STEM from among its Fellows and other experts in Africa and the Diaspora; • Preparation or guidance of reviews of existing situation and foresight studies; assist nations to adopt use of Microscience in schools - Look into making Engineering education in Africa more relevant; • Hold one or two conferences on this theme 	<p>STEM committee set up.</p> <p>Recommendations on adoption of Microscience in schools, including AVU;</p> <p>Conference recommendations.</p>	1-5 years	<p>Reports; Policy briefs;</p> <p>Conference abstracts and recommendations;</p>	<p>Collaboration with IOCD, RADMASTE Centre in RSA.</p>
	Climate Change <ul style="list-style-type: none"> • Establish expert committees in Climate Change and on Solar Radiation Management (SRM) from among its Fellows and other experts in Africa and the Diaspora; 	AAS will implement a collaborative programme on CIRCLE Africa;	1-5 years	Published papers; List of 60 postdoc and 40 post MSc fellows.	Promised sponsorship from DFID and collaboration with ACU will be realized.

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
	<ul style="list-style-type: none"> The expert committees will guide and oversee activities of the AAS Secretariat with regard to Climate change and SRM Conduct review of existing situations and foresight studies; Generate and disseminate advice to governments as well as regional bodies; Hold one or two conferences on this theme. 	<p>Offer postdoc and post MSc Fellowships;</p> <p>AAS will explore the possibilities of SRM to mitigate the effects of climate change.</p> <p>Conference recommendations.</p>	1-5 years	<p>Policy briefs</p> <p>Policy briefs</p> <p>Conference Reports</p>	
5.5 Engaging Governments and Policy Makers in Africa to Promote ST&I	<ul style="list-style-type: none"> Hold open, top-level, continent-wide forums, workshops, conferences and roundtable discussions on science and technology; AAS will set up task forces that can develop African perspectives to global issues, prepare technology foresights, and so on. 	<ul style="list-style-type: none"> Analysis of participants to show level of participation; Regularity of forums Evidence of ideas/projects emanating from the forums; Reviews and forecasts on critical subjects 	1-5 years		Support from AUY, RECs and other regional and national bodies

Strategic Objective	Activities	Objectively verifiable indicators of achievement	Time Frame	Sources and Means of Verification	Assumptions
5.6 Developing Databases of experts and R&D institutions	<p>Create a regularly-updated living online database of African scientists and scientists working in Africa.</p> <p>Extensive review of literature will be undertaken to identify scientific organisations and scientists working in Africa.</p>	<p>- A database of actively engaged African and non-African experts working in Africa;</p>	On-going	In-house database	

Chart 2: Proposed Structure of the AAS Secretariat



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