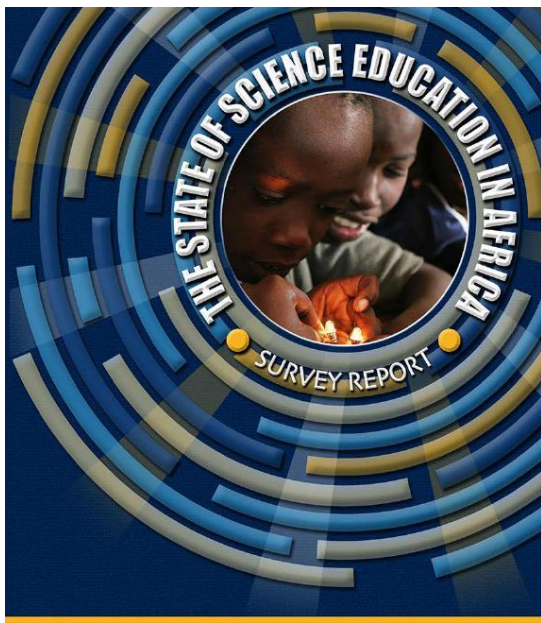


## The State of Science Education in Africa

Members of NASAC Science Education Programme (SEP) Working Group undertook a baseline survey on the *State of Science Education in Africa*. The survey facilitated the review of science education in the broad context of its availability as STEM (Science, Technology, Engineering, and Mathematics) in the curricula of different national education systems in Africa. The assumption was that science education is taught in the pedagogical context of Inquiry-Based Science Education (IBSE), which is also described as discovery methods, learning by doing, problem-based approach, experimental science and innovation.



[NASAC-SEP Survey Report](#)

The survey questionnaire was developed and circulated to NASAC members for distribution to secondary schools in their countries, in the timeline between 11 November 2020 and 12 February 2021. The report from that survey provided an analysis and summary of the findings. By the end of the survey period, twenty-four schools from five countries (Benin, Kenya, Nigeria, South Africa and Tanzania) provided responses to the questionnaire.

In the survey, almost all schools indicated that science teachers had undergraduate degrees, with the exception of one school that had a doctorate degree holder. Besides that, only 47.6% of the schools facilitated their teachers' participation in-service training. The survey indicated that close to 92% of the schools had science laboratories, but only 82% had equipment, chemicals and other relevant materials for practical science lessons. Practical science lessons can be improved if the laboratories are equipped, and schools without labs are capacitated. Most schools also indicated that science subjects were taught using a combination of theoretical and practical methods.

Sustainable Development Goals (SDGs) in science education is mainly taught for general awareness in 62.5% of the schools. The report concluded that the survey tool needs to be more deductive and narrower in scope so as to obtain unique information specific to the teaching of science and not education in general. Information and Communication Technology (ICT) can also play a significant role in science education and is very instrumental in the realization of SDG4, which aims '*to ensure inclusive and quality education for all and promote lifelong learning*'. SDG4 is notably a big ask for Africa, as it strives to bridge the technological gap with the rest of the world. ICT will help to leverage emerging opportunities for both teachers and learners in science education. Lastly, the report challenges science academies to foster interaction among scientists, science teachers and learners. In so doing, a link between education, research and industry is made possible and learners can then be encouraged to take up careers in STEM.

## From the President



Addressing grand challenges of this century, which are defined within the framework of international agendas (2030 Agenda, 2063 African Union Agenda, Paris Agreement, Sendai Framework, etc.), undoubtedly requires science-based responses to sustainability issues. Engaging children and youth through science education and the SDGs needs time. Yet time is running out for Africa. Science academies and their networks must collaborate with other UN agencies like UNESCO to curb the declining enrollment in STEM (science, technology, engineering and mathematics) in schools globally.

As advocates of STEM education, NASAC is convinced that Inquiry Based Science Education (IBSE) is the methodology that stimulates innate curiosity in learners rather than rote, dogmatic and book learning. The growing world population lacks enough understanding of the vital contributions of STEM in mitigating many societal challenges. Science literacy must therefore become an integral part of science education. STEM through IBSE extends knowledge and understanding of science concepts and processes to society at large. This makes it a valuable tool for decision making, participation in civic and cultural affairs, and economic productivity. Bridging this gap will provide a basis for engaging in STEM-related issues and offer innovative ideas from research to practice. It is for this reason that the Science Education Programme (SEP) remains NASAC's flagship programme.

NASAC-SEP also highlights and prioritizes digital transformation for socio-economic development in Africa. Digital transformation stands not only to

benefit areas of technology, but also every aspect of society, from education, healthcare, agriculture, habitations to large corporations and small businesses. In the current age, all socio-economic strategies must be underpinned by a strong investment in the ICT sector and in human capital development.

On 13 October 2022, the Inter Academy Partnership (IAP), Academy of Science of South Africa (ASSAF) and NASAC hosted a webinar on the Impact of climate change on food systems: using transdisciplinary science to drive mitigation and adaptation solutions to protect and promote health. The discussion focused on the effect of food security on the economy, livelihoods of Africans and their health, as it causes a decrease in GDP, malnutrition and food scarcity. Approaches to tackle food insecurity ranged from the promotion of agribusiness, technology to enhance food security, genome editing and pest management. These approaches in collaboration with farmers, policy makers, donors and scientists will lead to the increase of food insecurity in Africa.

NASAC participated in the *“International Conference on Science, Ethics and Human Development”* which was held in Quy Nhon, Vietnam on 13- 15 September 2022. The event focused on the COVID-19 Pandemic with focus on the impact of the interaction between scientists and policy makers on the quality and effectiveness of the policies adopted by the governments to protect their population.

Yours Faithfully,

  
**PROF. MAHOUTON NORBERT HONKONNOU**  
PRESIDENT, NASAC

# Activities and Events

## Impact of Climate Change on Food Systems

**FAO S&I Forum SIDE EVENT**

**Impact of climate change on food systems**

Side event organized by The InterAcademy Partnership (IAP), The Network of African Science Academies (NASAC), The Academy of Science of South Africa (ASSAf)

**Date & time:**  
13 October 2022, 2PM - 4PM (CEST)

**Registration:**  
<https://assaf-org-za.zoom.us/meeting/register/tJwrcOCopjoqHtdtISUYSDjA8YOZQz8Bnxnt>

Contact: [iap@twas.org](mailto:iap@twas.org)

The InterAcademy Partnership (IAP), NASAC and Academy of Science of South Africa (ASSAf) co-organized a webinar on *“Impact of Climate Change on Food Systems”* on 13 October 2022. The webinar focused on transformative change for sustainable food systems and nutritional quality, including climate-smart, resilient agriculture, involves improving research capacity, extension services and political commitment, aligned with SDGs.

The webinar also focused on the reconsideration of indigenous and underutilized food contributions and examination of food processing and other steps in the food chain and circular economy. Please click [on this link](#) to access the presentations.

## The International Conference on Science, Ethics and Human Development

NASAC President Prof. Norbert Hounkonnou participated in the *“International Conference on Science, Ethics and Human Development”* which was held in Quy Nhon, Vietnam on 13- 15 September 2022. The event focused on the Covid-19 Pandemic with focus on the impact of the interaction between scientists and policy makers on the quality and effectiveness of the policies adopted by the governments to protect their population.

Basic sciences are curiosity and inquiry driven. They are the foundations of education and the sources of discoveries which turn into applications which can serve an inclusive sustainable development (improving global equity and well-being together with a healthy and lively planet). It is important that governments invest in basic sciences over the next decade.

Sustainable Development is a unique opportunity to build a better world: improve well-being beyond just consuming, target global equity, human dignity and a lively and healthy planet. Vietnam is at a turning point. It could become a role model in inventing a new way and model for development, moving slowly and smoothly from mass production development to sustainable production development.

## Algeria Academy of Science and Technology General Assembly



The Algeria Academy of Science and Technology held its annual General Assembly on 28 September 2022.

NASAC President Prof. Norbert Hounkonnou was present at the event. The NASAC President emphasized on the importance of the Algeria Academy of Science and Technology as it is a fundamental active member of NASAC in terms of advisory role based on scientific studies and contribution to socio-economic development of the country. The Academy President,

Prof. Malika Allab Yaker said that its members will gradually reach the number of 200 and it currently has 43 founding members after the death of three members.

## Ghana Academy of Arts and Sciences (GAAS)

The Ghana Academy of Arts and Sciences in collaboration with the African Institute of Mathematical Sciences Ghana, and the Ministry of Education, organized the maiden Francis Allotey Public Lecture at the Academy's Auditorium in Accra on 9 August 2022. The lecture was under the theme: Developing versatile and innovative STEM leaders for Africa's scientific excellence and socio-economic development and a climax to mark the 10th anniversary of AIMS and celebrate the birthday of the late Professor and former President of the Ghana Academy of Arts and Sciences. The lecture brought together participants from academia and research, policy, the donor and philanthropy community, industry, civil society, and the general public.

The guest speaker for the lecture was the Hon. Minister of Education, Dr. Yaw Osei Aduwum, MP. In a speech delivered on his behalf, the Deputy Minister, Hon. John Ntim Fordjour described the late Prof. Allotey as an immortal asset and treasure to Ghana, Africa, and the entire world. The Vice President, Sciences Section of the Academy, Emerita Prof. Isabella Akyinbah Quakyi in her welcome address expressed the Academy's delight to collaborate with AIMS- Ghana to organize the event in honour of Prof. Allotey, Fellow and former President of the Academy. The President of AIMS-Ghana, Dr Prince Osei, said, in his brief remarks that the pan-African organization had graduated 500 students from 27 African countries, with 33 per cent being females.

## Participation of Ivorian Academy of Sciences, Arts, Cultures of Africa and African Diasporas (ASCAD) in the 3<sup>rd</sup> International Congress on Pesticidal Plants (ICPP-3)

The 3<sup>rd</sup> International Congress on Plants for Pesticide Use (ICPP-3) was held in Yamoussoukro, Côte d'Ivoire, from 25-29 July 2022, with the close collaboration of the University Félix Houphouët-Boigny of Cocody-Abidjan and the West African Centre of Excellence on Climate Change and Biodiversity and Sustainable Agriculture (WASCAL). ASCAD took an active part in this congress through a delegation of three of its

members, led by Prof Anglade MALAN, Secretary of the Natural Sciences Domain of the said Academy. The two other participants from ASCAD were Prof. Séverin AKÉ (President of the Scientific Committee of the Congress) and Prof. Bi Crépin PÉNÉ (Moderator - Climate Change). The Congress had about thirty foreign delegations from Africa (West, Central, East, South), Western Europe, Latin America and the Caribbean. About twenty national structures also took part in it, among which we counted the structures of agronomic research, the NGOs, the phytosanitary firms, and the Representation of the World Environment Fund.

## Open Science in the South conference

Three years after the first edition of the Open Science in the South conference, IRD, CIRAD and the Benin National Academy of Sciences, Arts and Letters have joined forces to organize the second edition of this event, which will be held in Cotonou from 25 to 27 October 2022.

This edition topic is: “Management and openness of research data: panorama and perspectives in Africa”. The objective is to draw up an overview of the dynamics at work and to propose places for exchange (conferences, practical workshops, poster presentations) in order to share and promote good practices. In this context, a [call for papers, workshops and posters](#) has just been launched.

## NASAC – INGSA Africa Regional Webinars



**INGSA Africa - NASAC Webinar**  
Eastern Africa Region

INGSA-Africa and NASAC cordially invites you to a capacity enhancing webinar on “Enhancing the capacity of Academies of Science in Africa to provide rapid science advice in emergencies such as the COVID-19 pandemic and other emerging infectious diseases”.

The webinar will focus on the challenge of providing “Rapid Science Advice, Post-Covid-19

		
Keynote Speaker PROF. PAUL ARTHUR BERKMAN	Panelist DR. FRIDA NJOGU-NDONGWE	Panelist DR. SABBINA BAKEERA-KITAKA

Please click on the speakers names to view full profiles

Time: 3-5 PM East Africa Time  
Date: 24 October 2022  
Registration link: [https://docs.google.com/forms/d/1-uB5jL3dgwrbo1sa13Gq2\\_GAsSBbPa-f2hRnp\\$5md6Q/edit](https://docs.google.com/forms/d/1-uB5jL3dgwrbo1sa13Gq2_GAsSBbPa-f2hRnp$5md6Q/edit)

NASAC In partnership with INGSA Africa, hosted a series of webinars from 24-28 October 2022. The topic was on “*Enhancing the capacity of academies of science in Africa to provide rapid science advice in emergencies such as the COVID-19 pandemic and other emerging infectious disease*”, this focused on the challenges of providing rapid science advice, post COVID-19. The discussions were all inclusive and diverse as it featured Keynote speakers and panelists from East, North, South, West and Central Africa, which made for a great attendance with over 130 participants. Issues concerning the continuous rise of new variants of COVID-19 were addressed and the importance of science in tackling this problem. The discussions also focused on problems faced after COVID-19 in Africa, with an emphasis on the collaboration between scientists, science academies, policymakers and society in collectively acting as a solution to the problem faced in a post COVID-19 era.

# Announcements

## Policy Paper and Its Disastrous Impact in Africa



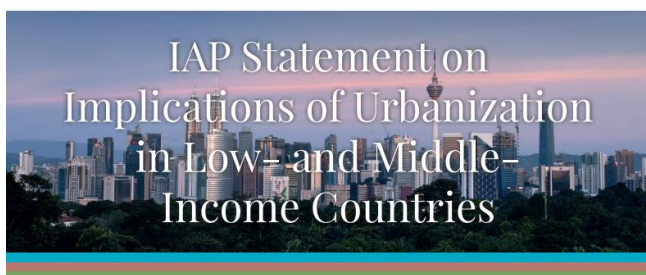
Climate change is happening now in Africa! This is substantiated by the occurrence of prolonged severe droughts and desertification, periodic flash or perennial devastating floods, melting of ice caps, sea-level rise and pest invasion.

In addition to these climatic hazards, the vulnerability of the African population to climate change is further aggravated by the presence of multiple debilitating factors including, topographic heterogeneity, prevalence of pre-existing climate-sensitive diseases and the low adaptive capacity of the vulnerable groups who lack reliable economic resource base.

Further temperature rise is projected in the African continent as well as more frequent cyclones in Eastern and Southern Africa.

These events will lead to water crisis and desertification affecting food security and cascading into multiple interrelated adverse health and other impacts. Please click on [this](#) link to access a copy of the Policy Paper in English and [here](#) for the French version.

## IAP Statement: Implications of Urbanization in Low and Middle Income Countries



In recent years, urban development in low-and middle-income countries (LMICs) has been the subject of serious discussion at the international level. In 2015, UN Member States adopted 17 Sustainable Development Goals (SDGs) among which SDG#11 was specifically about the sustainability of cities. In the following year, the outcome of the UN's Habitat III conference on a 'New Urban Agenda' was endorsed in

In recent years, urban development in low-and middle-income countries (LMICs) has been the subject of serious discussion at the international level. In 2015, UN Member States adopted 17 Sustainable Development Goals (SDGs) among which SDG#11 was specifically about the sustainability of cities. In the following year, the outcome of the UN's Habitat III conference on a 'New Urban Agenda' was endorsed in its entirety by the UN General Assembly. Those two international events bind all countries globally to be cognizant of and to promote these recommendations. Even earlier, in 2012, population growth coupled with unplanned urbanization was recognized as being among the most serious concerns worldwide by the InterAcademy Partnership. Download the full Statement [here](#).

# Appointments

## The Mauritius Academy of Science and Technology (MAST) new office bearers

The Mauritius Academy of Science and Technology (MAST) is a non-profit, non-governmental organization created by a group of high-level concerned scientists to bring together some of the best brains in the country and the diaspora, under one association, willing to reflect on some of the burning issues of **Science, Technology and Innovation** and offer independent and studied opinion on them and to promote our development. It strives to promote excellence in all areas concerned by its mission.

The Academy, in collaboration with existing institutions, promotes the popularization and understanding of **Science and Technology** in the population, while encouraging creativity and innovation that can make the service and production sectors competitive on the world market. In partnership with relevant organizations, local and foreign, the Academy enhances cooperation and dissemination of scientific and technological knowledge for a knowledge-based economy.

The Academy addresses current national problems where Science and Technology can contribute answers and solutions.

### List of office bearers for 2022-2024

**President:** Dr Salem Saumtally

**1<sup>st</sup> Vice President:** Prof Goolam Mohamedbhai

**2<sup>nd</sup> Vice President:** Prof Yashwant Ramma

**Immediate Past President:** Dr Michael Atchia

**Founder President:** Prof Soodursun Jugessur

**Secretary:** Dr Ravhee Bholah

**Assistant Secretary:** Dr Asha Dookun-Saumtally

**Treasurer:** Dr Ranjeet Bhagooli

**Assistant Treasurer:** Past President Dr Yusuf Maudarbaccus

**Member:** Past President Dr Jean Claude Autrey

**Member:** Dr Deoraj Caussy

**Public Relations Officer/Editor:** Dr Michael Atchia

The MAST membership comprises of:

- **Honorary Fellows**
- **Fellows:** *very senior scientists with many years of experience*
- **Members:** *scientists with minimum of ten years post PhD*
- **Associate Members:** *Scientists with basic science qualifications and still ready to promote STI in Mauritius*

## On the Spotlight

### The Annual Meeting of African Science Academies



*Participants at the AMASA conference*

The Annual Meeting of African Science Academies (AMASA) commenced on the 28<sup>th</sup> November 2022, it was a three day event that hosted over 70 participants. Hosted by Kenya National Academies of Science (KNAS) and co-hosted by NASAC with Regional partners such as INGSA Africa, IAP, TWAS and African Science Dialogue. The conference was led by NASAC's President Prof. Norbert Hounkonnou and the honorary secretary of

KNAS Prof. Ratemo Michieka. The discussions centered on the improvement of food security in Africa through the introduction of GMOs.

They highlighted the on ongoing debate surrounding the safety concerns of GMOs in Kenya, which is currently under suspension by the Kenyan High Court. Prof. Michieka noted that climate change has had an adverse effect on agriculture, as it has created a scarcity of food resources and affected the quality of food, therefore GMOs need to be considered as a solution to food scarcity.



*AMASA press briefing*

The participants from the conference voiced the shared opinion that a lot of misinformation on GMOs has created a fear of GMOs and further research should be made by individuals before discussing the safety of GMOs. Through coherent conversations and dialogue the benefits of GMOs can be effectively communicated to the local buyers. The inclusion of farmers was also stressed as necessary in the conversations that include GMOs.

The conference touched on a wide panel from International organisations such as the Africa Harvest, Crop Science Africa, INGSA, and Africa law Society of Kenya, National Research Centre, Kenya Forest Service, Kenyatta University, Ministry of Education and other health centre research institutes.

Africa Population and Health Research Centre (APHRC) Executive Director Dr. Catherine Kyobutungi

emphasized that research is a tool that creates a transformative effect by providing evidence to the community through local organizations. Local organizations are the most equipped to identify and understand local issues to create more sustainable partnerships and therefore stronger systems within the community.



*APHRC Executive Director Dr. Catherine Kyobutungi*

The topic on capacity building and funders was discussed by participants, as capacity building needs the support of donors so as to make the change a reality, through the implementation of technology, innovation can be nurtured

and knowledge on research universities and institutions can be disseminated, to implement active change through local universities and academies of sciences.

# Member Academy Feature

## ASSAf Science-for-Society Gold Medals for outstanding achievement

The Academy of Science of South Africa (ASSAf) annually awards ASSAf Science-for-Society Gold Medals for outstanding achievement in scientific thinking to the benefit of society. This year the awards were presented to two eminent scientists, Prof Karin Hofman and Prof Achille Mbembe, at its Annual Awards Ceremony held on 19 October 2022.

**Prof Karen Hofman** is Research Professor and founding Director of the SAMRC Centre for Health Economics and Decision Science/ PRICELESS SA at the University of the Witwatersrand. Because she has applied scientific thinking in the service of society we are, as a population, healthier. The bread eaten by South Africans today has significantly less salt in it that it did 10 years ago. This is the consequence of mandatory regulations based on PRICELESS/SA research that showed how many lives could be saved from averting strokes and the cost savings of doing so. It is one of the most cost-effective interventions for population health. Similarly, we now have choices when we order sugar sweetened beverages which include low to no sugar options and smaller volume cans. This industry response was prompted by mandatory legislation first introduced by parliament in 2016 and passed in 2018. Liquid sugar is a major contributor to obesity, starting in childhood and extending across the lifespan with obesity-related disease numbers now having overtaken HIV/AIDS in SA. This demonstrates how intersectoral action is essential to improve population health. Her work

on universal health coverage has strategically focused on priority setting is a key driver to implement a sustainable NHI by doing research to inform the shape of health benefit packages and decisions to improve both health systems and population health outcomes. She role models the essence of this award by conducting transdisciplinary research: she identifies policy relevant issues, engages with the various relevant publics before, during and after the research endeavor and commits time and has the expertise to disseminate the research evidence through various channels both academic and, importantly, with the media as well as direct public engagement. This demonstrates a rare combination of skills that Prof Hofman has mastered which is why this Gold Medal is appropriately awarded to her.

Over the last twenty-five years, **Prof Achille Mbembe** has consistently published works of international stature and reputation. His work has played a role in shaping the scholarly agenda of the Humanities in late modernity. Achille Mbembe, born in Cameroon, obtained his PhD in History at the Sorbonne in Paris in 1989 and a D.E.A. in Political Science at the *Institut d'Etudes Politiques* (Paris). He is the recipient of an Honorary Doctorate from the University of Paris VIII (France) and *Universite Catholique de Louvain* (Belgium). He has also held the Albert the Great Chair at the University of Koln (2019) and was an Honorary Professor at the Jakob Fugger-Zentrum, University of Augsburg (Germany). He has been awarded

numerous awards, including the 2015 Geswichter Scholl-Preis, the 2018 Gerda Henkel Award, and the 2018 Ernst Bloch Award.

Between 1980 and 1996, he was preoccupied with late colonial politics, decolonization and emerging nationalism. Mbembe's work was instrumental in shifting debates on the place of power in Africa's postcolonial period. At a conceptual level the terms "postcolony" and also "necropolitics" have become associated with Achille Mbembe's work. These are now key-terms in the vocabulary of the global Humanities. Of notable importance is his published work, *Necropolitics*, in which Mbembe theorizes about the origins of the contemporary world while highlighting the increase in militarization, inequality, and the revival of racism and fascist forces. He continues to produce globally leading scholarship. He published *A Critique of Black Reason* (2017) which is his seventh book. It has now sold over 12,000 copies. This work is an attempt at revisiting the relationship between capitalism and racism, building to a large extent on the deep intellectual history that has long been concerned with this relationship. Over and above the multiple

translations of his work, Mbembe has been cited thousands of times and it is no exaggeration to say that he is the most cited African scholar of his time and, it is indeed an unusual week if he is not asked to present a major public talk in South Africa or internationally. Mbembe's interdisciplinary approach combining History, Philosophy and Political Studies has tackled key questions of our time. From an early critical reflection on why the social revolutions in Africa that would be poignantly predicted under conventional Marxist theory never arrived, through revisiting the politics of life and death in his writings on 'necropolitics', and in his most recent preoccupations with whether we can take seriously the planetary predicament of the African continent and the diaspora, and the very possibility that the fate of earth may be playing out on this continent itself, Mbembe stands out as one of the key thinkers of the late twentieth and early twenty-first centuries. Mbembe further published *Deglobalization* in 2020, which takes this further to argue that digital computation is engendering a new common world and new configurations of reality and power. But this ubiquitous, instantaneous world is confronted by the old world of bodies and distances.



The Network of African Science Academies (NASAC) was established on 13 December 2001 in Nairobi, Kenya and is currently the affiliate Network for InterAcademy Partnership (IAP) in Africa.

NASAC is a consortium of merit-based science academies in Africa that aspires to make the “voice of science” heard by policy and decision makers within and outside the continent. NASAC is dedicated to enhancing the capacity of existing national science academies and champions in the cause for creation of new academies where none exist

As at December 2022, NASAC comprised of the following twenty-eight members:

1. **African** Academy of Sciences (AAS)
2. **Algerian** Academy of Science and Technology (AAST)
3. Académie Nationale des Sciences, Arts et Lettres du **Bénin** (ANSALB)
4. **Botswana** Academy of Sciences (BAS)
5. Académie Nationale des Sciences du **Burkina** (ANSB)
6. **Burundi** Academy of Sciences and Technology (BAST)
7. **Cameroon** Academy of Sciences (CAS)
8. Académie Nationale des Sciences et Technologies du **Congo** (ANSTC)
9. Académie Congolaise des Sciences (ACCOS) - DRC
10. Académie des sciences, des arts, des cultures d'Afrique et des diasporas Africaines, **Cote d'Ivoire** (ASCAD)
11. Academy of Scientific Research and Technology, **Egypt** (ASRT) – *Provisional Member*
12. **Ethiopian** Academy of Science (EAS)
13. **Ghana** Academy of Arts and Sciences (GAAS)
14. **Kenya** National Academy of Sciences (KNAS)
15. **Madagascar's** National Academy of Arts Letters and Sciences
16. **Mauritius** Academy of Science and Technology (MAST)
17. Hassan II Academy of Science and Technology in **Morocco**
18. Academy of Sciences of **Mozambique** (ASM)
19. **Nigerian** Academy of Science (NAS)
20. **Rwanda** Academy of Sciences (RAS)
21. Académie des Sciences et Techniques du **Sénégal** (ANSTS)
22. Academy of **Science of South** Africa (ASSAf)
23. **Sudanese** National Academy of Science (SNAS)
24. **Tanzania** Academy of Sciences (TAS)
25. Académie Nationale Des Sciences, Arts Et Lettres Du **Togo** (ANSALT)
26. **Tunisia** Academy of Sciences Arts and Letters
27. **Uganda** National Academy of Sciences (UNAS)
28. **Zambia** Academy of Sciences (ZaAS)
29. **Zimbabwe** Academy of Sciences (ZAS)

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