

Launch of the Angolan Academy of Sciences

[By Emanuel Catumbela, MD. PhD Coordinator of the AAC Installation Commission]



His Excellency Vice President of the Republic of Angola during the launch of the Angola Academy of Science

The proclamation ceremony of the Angolan Academy of Sciences (AAC) took place at the Talatona convention center, on the outskirts of the city of Luanda, Angola. In his address, the Vice-President of the Republic of Angola said that the Angolan Academy of Sciences will play a decisive role in promoting scientific studies relevant to society, with guaranteed prestige, scientific rigor and excellence, in cooperation with the best in the world. In turn, and without losing sight of its conventional functions, which are teaching, research and academic extension, the Academy must promote advanced scientific knowledge and

contribute to its application in solving real problems of communities, institutions and companies. Challenges such as drought, poverty, malaria and other tropical diseases, growing urbanization, climate change, declining economy etc., require the contribution of scientific knowledge.

In her speech, the Minister of Higher Education, Science, Technology and Innovation stated that the ministry was pleased with the creation of the AAC, thus fulfilling part of Objective 3 of the Higher Education Quality Improvement Program and the Development of Scientific Research and of the National Development Plan 2018-2022. The Plan aims to develop the national human, scientific and technological potential, through the consolidation of the National Science and Technology System, the training of researchers, the promotion and coordination between Scientific Research Institutions and Higher Education Institutions and the creation of the Academy. Angola now has an independent association, made up of different academics who will be advisers and key collaborators in developing policies in science, for the benefit of society. Since the societal purpose of AAC is to promote scientific excellence, public awareness of the importance of science and sustainable development based on science, as stated in its statutes, AAC is an important partner of the Executive to promote scientific culture, as recommended by objective no. 5 of the National CTI Policy, approved by Presidential Decree no. 201/11, of 20 July.

The NASAC President said that *the prime mission of the Angolan Academy is to empower curiosity, discovery and innovation by stimulating interest in STI. The academy must also promote and support research, improve*

science education, disseminate scientific knowledge, recognize and publicize high achievement and ethics. These aspirations by the Angolan Academy remain fully supported by NASAC.

Professor Romain Murenzi in his address, spoke about the importance of a science academy. He stated that academies should be seen as a resource available to their national governments when seeking advice on scientific issues – such as the development of a nation’s renewable energy policy for the next 20 years. The Academy could also contribute to plans of managing water resources more sustainably, or support efforts to improve agricultural production or urban health. The input of science and technology is increasingly being recognized by decision-makers when designing effective policies. The role of academies in providing timely and unbiased advice is being recognized more and more around the world. The establishment of the Angolan academy will thus complement Angola’s national science institutions.

The Angolan Academy of Sciences has 12 founding members, including university professors and scientific researchers, who are from different spheres of knowledge such as: Medicine, Engineering, Agriculture, Biology and Social Sciences and Humanities. As an immediate activity, the process of admission of new members is underway. During the next general meeting in 2021, AAC members will elect officials who will serve in the AAC’s governance structures including the President.

From the President



Even before COVID -19, the world had its share of social problems. Despite that, technological advances and new scientific breakthroughs

significantly influenced the course of scientific research activities.

Before COVID-19, we experience a period of immense and extended technological, social and economic change resulting from artificial intelligence industrial revolution. In February 2020, NASAC electronic bulletin Volume 7 Issue 1, we highlighted the grand challenges which are defined within the framework of Agenda 2030, African Union Agenda 2063, Paris Agreement, Sendai Framework, etc., that undoubtedly required science-based responses towards sustainable solutions.

It is simply unrealistic to attain any developmental realizations unless the strategy is backed by a strong ICT framework and capital investments, both human and financial. Africa need not miss the fourth industrial revolution that is dominated by artificial intelligence and knowledge democratization. The pandemic and complex systems presented during a Webinar on *Mathematics for Human Flourishing in the Time of COVID-19* held on the 21st October 2020 resolved that to understand the current crisis, complex systems must be deployed. The systems must utilize integrated ways of tackling issues requiring the involvement of several scientific disciplines. A transdisciplinary approach must be adopted if we are to survive the global pandemic and any future crisis.

Academies must therefore support their countries to develop strategies that are underpinned by a strong ICT sector and investment in human capital development. This is the only way to embrace the fourth industrial revolution. It is the only to explore the possibilities availed to humanity by both artificial intelligence and knowledge democratization.

The world has witnessed unprecedented research response over just a few recent months. Science academies must be active players in local, national and regional efforts while IAP together with its four regional networks in Africa, America, Asia and Europe provide a platform for academies to collaborate and amplify their role of providing evidence-based advice.

Most importantly, academies must help countries develop and align artificial intelligence strategies with that of the United Nations and African Union Agendas. Regionally, the support provided to nations by academies must aim to address socio-economic challenges plaguing human capacity development and applied research interventions.

On NASAC's part, and based on the foregoing, the Science Education Programme (SEP) will remain the cornerstone of influencing the next generation of scientists. SEP continues to explore Inquiry Based Science Education (IBSE) and will undertake a survey in 2021 to understand the state of science education in Africa. It is hoped that the interest towards exploring career options in Artificial Intelligence will be spurred.

We take this opportunity to truly appreciate both our members and our partners in 2020. Without you the tough year would have wreaked havoc on any milestones, intended or achieved. We also wish you a truly prosperous and very happy New Year!

Yours faithfully,

**PROF. MAHOUTON NORBERT
HOUNKONNOU**

NASAC President and Chair of the Board

Activities and Events

The 16th meeting of the NASAC general assembly

The Sixteenth meeting of the NASAC general assembly was held virtually on the 19th September 2020. More than 20 member academies participated in the meeting. Members reviewed the activity report of the year 2020 and planned for the initiatives that will be undertaken towards enhancing the sustainability of NASAC in the near future.

NASAC/UNTB Collaboration

The initiative between NASAC and UNTB to set up new science academies Phase 1, came to a close with all the new academies (DRC, CAR, Malawi, Lesotho, Angola and Chad) having a webinar to review the progress, achievements and challenges faced in the year 2020. It was also a time for all the new science Academies to celebrate and congratulate Angola for launching its Science Academy on 4 December 2020.

Early 2021 will see the Launch of DRC, CAR, Malawi, Lesotho and Chad Science Academies. The focus of this partnership is to Establish Science Academies in Least Developed countries in Africa.

ASSAf Virtual Annual Awards

The Academy of Science of South Africa (ASSAf) recognized two of South Africa's foremost scholars with gold medals at its virtual Annual Awards Ceremony held on 14 October 2020. ASSAf Science-for-Society Gold Medals for outstanding achievement in scientific thinking to the benefit of society were presented to Prof Tshilidzi Marwala, Vice-Chancellor of the University of Johannesburg, and Prof Leila Patel, the DSI/NRF South African Research Chair in Welfare and Social Policy, and Professor of Social Work.



Prof Tshilidzi Marwala is an engineer and AI Professor who has made a distinguished contribution to the development of artificial intelligence and its various applications at the highest academic levels of research and postgraduate supervision. Prof Marwala has used his position as an academic expert and science communicator to allay the fears and concerns expressed by the public toward artificial intelligence. Through Prof Marwala's outreach activities, he has become a role model to University students and an inspiration to high school learners. Prof Marwala's personal journey is inspiring and captures the imagination of young and old. Prof Marwala's unwavering commitment to excellence, which he attributes to his family, ensures that colleagues and students strive to be excellent.

Prof Marwala is a Fellow of the Academy of Science of South Africa, the Third World Academy of Sciences, the African Academy of Science and the South African Institute of Electrical Engineering. Professor Marwala is a Distinguished Scientist of the Association for Computing Machinery (ACM). This acknowledgement from the ACM is reserved for the top 10% of ACM members who have made a significant impact on the computing field. In 2004, at the age of 33, Prof Marwala became the youngest recipient of the Order of Mapungubwe for his "inspirational achievements in the field of engineering science".

Prof Marwala has made significant contributions to the international policy on Open Data in a Big Data World for the International Council of Science (ICSU). In South Africa, Prof Marwala is the Deputy Chair of the Presidential Commission on the Fourth Industrial Revolution. The purpose of the commission is to assist the government to develop strategies to take advantage of the opportunities presented by the digital industrial revolution. Prof Marwala has shown that he is more than just a spokesperson for AI and 4IR; he is an influencer, motivator and commentator who engages with problems facing society at large.



Prof Leila Patel is not only recognized as a leading scholar in the field of social development internationally, she is also deeply committed to using science to effect the betterment of society both in South Africa and in wider developing contexts. She is recognized as a global leader in the field of social development, having refined social development theory and developmental social welfare theory and practice for developing contexts. She has applied this thinking to informing social policy, and developing and testing innovative programmes that aim to promote better social and economic outcomes for vulnerable groups. This ethos, which emerged in her PhD research, continues to infuse her scholarship.

Her PhD, further developed in her book *Restructuring Social Welfare Options for South Africa* published in 1993 by Ravan Press provided the conceptual basis for the social development approach to social welfare in South Africa and later informed the *White Paper for Social Welfare* that was adopted by parliament in 1997. This policy document, until very recently, was the guiding document for the country's welfare approach. It fundamentally shifts thinking about social welfare from being a state-led top-down colonial system to one of developmental social welfare; that is, a policy approach that recognizes the roles of all actors to support communities and people through economic strengthening and social welfare services to best meet their needs and achieve their goals. In her role as Director General of Social Welfare in the Mandela-led government she brought scientists and policy makers together in the Lund Commission to conceptualize and promulgate the Child Support Grant (CSG). Her research continues to assess the important effects of the CSG – which now reaches over 11 million children – and to consider innovative mechanisms to enhance the outcomes of children who are recipients.

In all of the above work there is clear evidence of the ways in which Prof Patel has used scientific knowledge and activity – her own and that of others that she recognizes as playing a critical scientific role – as a common ground to inform social policy and practice in South Africa and to serve society. This continues to be a core value of her ongoing research. Prof Patel's career has been an inspiration to many researchers, policy makers and practitioners. Her own energy, ideas and enthusiasm have inspired countless researchers who have worked at the Centre for Social Development in Africa (CSDA) - a research Centre that she founded and built over 14 years to promote cutting-edge basic and applied social development research to better address complex development challenges. The CSDA has flourished under her leadership to become a unit that now employs 18 staff members. Part of the CSDA's mission has been to train social development researchers. Many of these researchers and students have gone on to play leading roles in national government departments, academic institutions, civil society organizations, and corporate social responsibility units in the private sector.

In 2014 Prof Patel received the Woman in Science Award in recognition of the work she has done in promoting the field of social development and developmental welfare, and the impact it has had on development practice in the country. Earlier this year she won the Katherine A Kendall Memorial Award from the International Association of Schools of Social Work, in recognition of outstanding contributions to the field of social work education internationally. These awards recognize the immense contribution she has made to research excellence, teaching, and inspiring the next generation of social development scholars,

policy makers and practitioners. Prof Patel has published prolifically, won many awards, and held distinguished positions during her career to date. But as was written by Prof Michael Sherraden, George Warren Brown Distinguished University Professor at Washington University St Louis, in 2014 *“from the outset, Dr Patel’s career in social welfare and social development was deeply engaged in the community and committed not just to effective practice, but also to applied scholarship, and to the larger goal of freedom. Her grounding in communities and in scientific inquiry became a strong foundation.”* That foundation has led to ongoing and significant impacts that demonstrate how science can serve society, and that is perhaps her greatest achievement to date.

Sixth Presidential Roundtable Discussion - Frankensteins or gods? The Impact of the New Technologies on What It Means To Be Human

The sixth of a series of ASSAf Presidential Roundtables moderated by ASSAf’s President, Prof Jonathan Jansen, took place virtually on 25 November 2020.

The discussion titled, “Frankensteins or gods? The Impact of the New Technologies on What It Means to Be Human”, featured Prof Margaret Levi, Director: Center for Advanced Study in the Behavioral Sciences and Professor of Political Science, Stanford University, as the guest speaker.

The guest lecture put the human question in and the societal implications of artificial intelligence (AI) under the spotlight and addressed the questions that we face, as machine learning and algorithmic decision become more deeply embedded in the processes that guide our information sources, our governing and criminal justice system, our shopping, and so much more.

Prof Levi was joined by local scholars, Prof Tshilidzi Marwala, Vice-Chancellor, University of Johannesburg and one of the world’s foremost thinkers on the Fourth Industrial Revolution (4IR); Dr. Asheel Singh, Senior Lecturer in Philosophy, University of Johannesburg and Dr Mpho Tshivhase, Senior Lecturer in Philosophy, University of Pretoria.

Although AI can improve some of our decision making well beyond human capability, it can control our lives and our choices in ways we do not want, would never want, and yet do not fully perceive until too late. The alternative to either of these extreme scenarios is to think of how best to establish a partnership, where humans and machines work together to construct a better world for us all. This requires recognizing the contribution of each to a reimagined division of labor, ensuring that each does its part within proper domains and according to appropriate standards, and nourishing each of the partners as we evolve together.

Professor George Smith's Covid-19 Vaccine Conference in Tunisia Academy of Arts and Letter- Beit al-Hikma: a glimmer of hope in the midst of darkness

At the end of last October, the Tunisia Academy of Arts and Letters - Beit al-Hikma invited Professor George Smith from the University of Missouri in the United States, Nobel Laureate in Chemistry in 2018, to give a webinar on the topic: "Covid-19 RNA vaccines: technology and new vision for the pharmaceutical market". The Palestinian Academy of Science and Technology also participated in the webinar. George Smith is known for his development of the "phage display", a laboratory technique using bacteriophages (viruses that infect bacteria) to study protein-protein, protein-DNA and protein-peptide interactions. The phage display has proven useful in the development of antibody-based treatments for diseases such as rheumatoid arthritis, inflammatory bowel disease, cancer and lupus, and has contributed to the study of pathogenic peptides, such as those produced by Plasmodium falciparum, a parasite responsible for malaria. George Smith received the Nobel Prize in Chemistry in 2018 for this work, sharing the award with Greg Winter and Frances Arnold.

Announcements and Appointments

BEREAVEMENT

Benin National Academy of Sciences, Arts and Letters (ANSALB) sadly announces the passing away of Academician Prof. Abiola Felix Iroko.



Academician Prof. Abiola Felix Iroko was a full professor at the University of Abomey-Calavi, Benin, he was a founding member of ANSALB. He was a great historian, one of the prides of Africa in his field of expertise. He served as Deputy Perpetual Secretary in the very first board of Benin National Academy of Sciences, Arts and Letters from 2010 to 2014. He served in diverse capacities at Global, Regional and National levels. He authored more than 60 publications in renowned international journals, 521 papers of scientific vulgarization, 18 books. He was Fellows of various renowned scientific organizations, Fellow of the Belgium Royal Academy of Overseas Sciences (ARSOM/KAOW).
May His Soul Rest in Eternal Peace!

ACADEMY OF SCIENCE OF SOUTH AFRICA'S NEW OFFICE BEARERS

ASSAf recently elected new office-bearers and Council members to serve the Academy. ASSAf is governed by a Council, comprising 12 elected Members and a 13th Member appointed by the Minister as a representative of the National Advisory Council on Innovation (NACI). The Academy is pleased to announce its new office-bearers and Council members for the 2020 – 2024 term. Office-bearers and Council members may serve 2 consecutive terms of four years each.

Vice-Presidents

Prof Stephanie Burton is Professor in Biochemistry, and Professor at Future Africa, at the University of Pretoria. From 2011 to 2020, she was the Vice-Principal for Research and Postgraduate Education at the University of Pretoria. She holds an MSc in Organic Chemistry (1990) and a PhD in Biochemistry (1994) from Rhodes University. Professor Burton's academic career started in Biochemistry and Biotechnology at Rhodes University, and then as Professor in Chemical Engineering at the University of Cape Town. She served as Director of Postgraduate Studies and Director of the Biocatalysis and Technical Biology Group at Cape Peninsula University of Technology before her current appointment. Her research interests are in sustainability, applied biochemistry and biotechnology, and she has held a National Research Foundation B rating. She has published widely and supervised numerous postgraduate students.

Prof Sabiha Essack is the DST-NRF SARChI Research Chair in Antibiotic Resistance and One Health and Professor in Pharmaceutical Sciences at the UKZN. Prof Essack also continues to serve as ASSAf General Secretary.

Council members

Prof Irvy (Igle) Gledhill is the visiting Adjunct Professor in Flow Physics at the University of the Witwatersrand. She holds a PhD in plasma physics from the University of Natal. She did her post-doctoral work at UCLA on thermonuclear fusion, and at Stanford on Space Shuttle physics. For 30 years, she specialised in transonic computational fluid dynamics at the CSIR, South Africa. She also contributed as a computational physicist within diverse multidisciplinary collaborations including rational drug design,

ocean engineering, and mine safety. Her current research interest is in unfolding and exploiting the aerodynamics of accelerating objects. She serves on the executive of the Gender Gap project of the International Science Council and 11 international unions. She is a Member of Sigma Xi, a Past President of the South African Institute of Physics, and a council member of the SA Council for Natural Scientific Professions. She has served as a member of the World Cultural Council Interdisciplinary Committee. She is currently as Editor-in-Chief of African Physics Newsletter and serves as one of three Vice-Presidents of the Network of African Science Academies.

Prof Evance Rabban Kalula is the Chairperson of the International Labour Organization (ILO) Committee on Freedom of Association (CFA). He is also Emeritus Professor of Law at the University of Cape Town (UCT), as well as Honorary Professor at the University of Rwanda, fellow of the Stellenbosch Institute of Advanced Studies (STIAS) and ad hoc Executive Policy Advisor to the University of Lusaka (UNILUS). He held various positions at the University of Cape before going into active retirement in 2017, among them as Director of the International Academic Programmes Office (IAPO) and the Confucius Institute. He was a holder of a personal chair as Professor of Employment Law and Social Security. He holds several degrees in law, including a PhD. He was educated at the University of Zambia School of Law; Kings College, London; Balliol College, Oxford (where he was a Rhodes Scholar) and the University Warwick School of Law. His academic, policy and research interests are in international and comparative labour law, international trade, regional integration and social protection. He previously served as Chair of the South African Employment Conditions Commission (ECC), member of the ILO Commission of Inquiry on Freedom of Association in Zimbabwe, and Chair of the University of Lusaka Council (UNILUS). He was until recently a member of the Ministerial Advisory Panel of the then South African Department of Economic Development Department (EDD). He is a fellow of the African Academy of Sciences (AAS) and serves on its Governance and Nominations Committee (GNC), advisor on Council of the South African Academy of Science (ASSAf) and is a member the Institute of African Alternatives (IAA) Board. He serves on the editorial boards of a number of leading local and international journals, including the Human Sciences Research Council (HSRC) Press Editorial Board. He is a past President of the International Labour and Employment Relations Association (ILERA).

Prof Julian May is the Director of the Centre of Excellence in Food Security at the University of the Western Cape. He has worked on options for poverty reduction including land reform, social grants, information technology and urban agriculture in Southern, East and West Africa and in the Indian Ocean Islands. He has also worked on the development and use of systems for monitoring the impact of policy using official statistics, impact assessment and action research. He has been an associate research at Oxford University, the University of Manchester and the International Food Policy Research Institute. In 2009 the National Research Foundation awarded him a Tier One South African Research Chair in Applied Poverty Reduction Assessment. He has edited 4 books and published over 60 papers in books and academic journals.

Prof Christian Pirk is a Professor and heads up the Social Insects Research Group (SIRG) in the Department of Zoology and Entomology at the University of Pretoria. Born in Berlin, Germany, he studied Biology and Mathematics at the Technical University Berlin before finishing his PhD at Rhodes University in 2002. His research focuses on the behavioural and chemical ecology of social insects, in particular honeybees. He is involved in international networks with an interest in pollinator and honeybee health and collaborates with colleagues in Europe, Asia, America and Africa. He provides a base for students interested in behaviour, chemical ecology, mathematical modelling, nutrition and social insects in general.

Office bearers and Council Members who continue to serve

President

Prof Jonathan Jansen is a Distinguished Professor of Education at the University of Stellenbosch. He is President of the Academy of Science of South Africa and in 2020 will be a Knight-Hennessy Fellow at Stanford University. He started his career as a Biology teacher in the Cape and holds a PhD from Stanford as well as honorary doctorates from Edinburgh, Vermont, Cleveland State and the University of Cape Town. He is the author of the award-winning book, *Knowledge in the Blood* (Stanford University Press) and his 2019 books include *Inequality in South African schools* (with Nic Spaull, Springer Publishers) and *Decolonization in universities* (Wits U Press), His 2020 books include *Race, Science and Society* (SUN MEDIA) and *Who gets in and why: the politics of admission in South Africa's elite schools* (with Samantha Kriger, UCT Press). He was recently elected as a Fellow of the International Academy of Education.

Treasurer

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

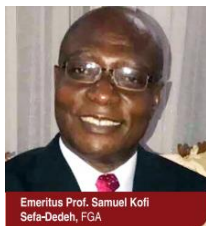
Members

Prof Wim de Villiers is the Rector and Vice-Chancellor of SU, Vice-Chairperson of Universities South Africa (USAf) and a Council Member of the Association of Commonwealth Universities (ACU).

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

Prof Refilwe Nancy Phaswana-Mafuya is the Deputy Vice-Chancellor (DVC): Research and Innovation at North-West University (NWU). She is one of the few qualified black female epidemiologists in South Africa. She is an ASSAf member, AAS Fellow and NRF rated scientist. She is also member of the International Panel on Infectology of the German Research Foundation.

The Ghana Academy of Arts and Sciences (GAAS) elected new council for 2021-2022 at its 205th General Meeting



Emeritus Prof. Samuel Kofi – is mandated to steer the affairs of the Academy for a two year period from January 2021 to December 2022. He replaces Justice Prof. Henrietta J.A.N Mensa-Bonsu, Justice of the Supreme Court of Ghana whose two year tenure of office ends in December 2020. The new executive will formally take office in January 2021.



Prof. Kofi Opoku Nti, Game Theorist, Independent Consultant and Former Dean of the University of Ghana Business School, Legon, as Vice President of the Arts Section



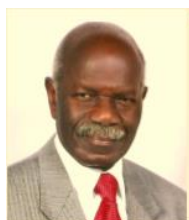
Prof. Lade Wosornu Professor of Surgery(retired) and founding Fellow of the Ghana College of Surgeons; Member, Ghana Medical Association and West African College of Surgeons; Poet, Philanthropist, Essayist and Columinst for the The Ghanian Times.



Emerita Prof. Isabella Akyinba Quakyi, Professor of Immunology and parasitology and foundation Dean of the School of Public Health (SPH), College of Health Sciences, University of Ghana (UG); 2014 laureate of the prestigious African Union Kwame Nkrumah Award for Women in Science; Secretary General, NASAC; and Member, Board of Ghana Nuclear Regulatory Authority, as Vice President of the Sciences Section.



Prof. Helen Atawube Yitah, Professor of English; Dean, School of Languages, University of Ghana; former Head, Department of English, University of Ghana; founding Director, University of Ghana- Carnegie Writing Centre; Fellow, Columbia University Center of Study of Social Difference and Chair, Publications Committee, GAAS, as the Honorary Secretary.



Professor Arthur Commey Saxkeyfio, Founding Dean of the University of Ghana School of Pharmacy.



Dr. Eugenia Date-Bah, former Director, Crisis Response and Reconstruction International Focus Programme, International Labour Organization (ILO).



Justice Prof. Henrietta Mensa-Bonsu, Justice of the Supreme Court of Ghana and immediate past president of the Academy.



Emerita Prof. Takiwaa Manuh, Vice Chairperson, National Development Planning Commission (NDPC); FORMER Director of the Institute of African Studies University of Ghana; Former Director at the Social Development Policy Division of the United Nations Economic Commission for Africa in Ethiopia; Member, Council

on Foreign Relations, Ghana (2020); and Member, Editorial Advisory Board, Feminist Africa (2020).



Prof. Alfred Apau Oteng-Yeboah, retired Professor, Department of Plant and Environmental Biology, School of Biological Sciences, the University of Ghana; founding bureau member and former vice Chair of Intergovernmental science policy platform for Biodiversity and Ecosystem Services (IPBES), representing Africa; joint winner of the 2014 international prestigious Midori Prize for Biodiversity and Former Deputy Director General of the Council for Scientific and Industrial Research (CSIR-Ghana).



Rev. Prof. Johnson Kwabena Asamoah-Gyadu PhD, ordained minister of the Methodist Church Ghana; Baeta-Grau Professor of Contemporary African Christianity and Pentecostal/Charismatic Theology at the Trinity Theological Seminary, Accra, Ghana and President, Trinity Theological Seminary

On the Spotlight

LEADING INTEGRATED RESEARCH FOR AGENDA (LIRA) 2030 IN AFRICA

Dr. Keneiloe Sikhwivhilu (LIRA Grantee)



NASAC had a chance to interact with one of the LIRA grantees Dr. Keneiloe Sikhwivhilu who successfully implemented and finalized her LIRA project titled **“Biogas-supported Decentralized Water Treatment System for communities in Diepsloot (South Africa) and Chambishi (Zambia) Townships: A feasibility study”**.

Dr. Keneiloe Sikhwivhilu is the principal scientist at Council for Mineral Technology (MINTEK), South Africa. She gladly shared here experience and challenges she faced while undertaking the project.

Below are some of her responses to our questions.

1. What challenges did you face while doing the project?

Working with multiple individuals within expert stakeholder organizations: This presented a significant research challenge, particularly given the need to dedicate sufficient time to produce detailed information, and also the often practical difficulties in accessing information as most of the stakeholders are busy with their own official business/duties. The involvement of the South African Local Government Association (SALGA) in the project facilitated most of the authorizations required as they gave directives institutions operating within the municipality, wherever challenges were encountered.

Restricted access to expert stakeholders: Stakeholders not providing crucial information as requested. Some of the crucial information had to be obtained from stakeholders operating outside of the province of the chosen research sites (Johannesburg Water took too long to allow access to information; the information which we ended up sourcing from elsewhere outside the province) Financial constraints. These were the major hindrances especially in Zambia. From inception the Zambian research team had planned to appoint two Master’s degree students but due to limited funds, this was not attainable. The team ended up training a number of undergraduate students as part of the student’s 3rd and 4th year practical work. Fortunately for the South African team, resources were leveraged from other projects the respective institutions have been involved in.

2. Which research methods did you use while doing the project?

Transect walks Survey undertaken through a questionnaire Guided interviews Focus group discussions. Raw water and energy resource assessment (i.e. quality, quantity and accessibility) was done using both primary and secondary data.

3. Which academic disciplines were involved in the research?

Chemistry & Materials Science- water quality assessment, water treatment methods and materials interaction with pollutants Environmental Engineering- Environmental impact assessments, environmental management compliance and policies Chemical Engineering- systems engineering Process Engineering- renewable energy expertise Geo-informatics- Geographic information systems, geospatial analysis (water resource mapping and environmental sustainability) Social Sciences- human behavioral aspects.

4. What challenges did you face while doing the final report of the project?

No challenges were faced, only that the project needed to be wrapped up before we could interact further with the communities. The team would have wished to implement some of the recommendations made within the communities, and then conduct a survey to determine the impact of the implemented solutions. Unfortunately, financial resources and time were constrained.

5. What motivated you to become a scientist?

I always had enquiring mind, always interested in how things work and why they work the way they do. It is no wonder that I ended up in the physical sciences profession. Additionally, I was interested in doing what people thought was hard; growing up in apartheid South Africa the science profession was restricted for African women, no wonder we knew nothing of African scientists (let alone African female scientists) in the 1980's or 1990's. Even Mathematics and Physical Science school teachers were predominantly men, as these disciplines were considered too difficult for women.

Nevertheless, I learnt during my undergraduate studies that science is not hard; that one only needs a teacher who is willing to go the extra mile to help the student understand and visualize those invisible atoms, electrons, molecular interactions, etc. I learnt that not only is science interesting and able to unlock answers to many intriguing questions, but that it can also be used to bring solutions to a myriad of challenges and is therefore able to advance the world in many ways.

I am happy to be in a profession that enables one to develop tangible solutions with a potential to make a positive impact (big or small) in our society. I am glad that an African girl child growing up in South Africa today, and anywhere in the world, has ample options of female role models in the science profession to look up to and that she can believe she can achieve anything she puts her mind and heart to, regardless of the societal stereotypes.

About NASAC

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 November 2019, 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 des sciences, des arts, des cultures d'Afrique et des diasporas africaines, **Cote d'Ivoire** (ASCAD)
10. Academy of Scientific Research and Technology, **Egypt** (ASRT) – *Provisional Member*
11. **Ethiopian** Academy of Science (EAS)
12. **Ghana** Academy of Arts and Sciences (GAAS)
13. **Kenya** National Academy of Sciences (KNAS)
14. **Madagascar's** National Academy of Arts Letters and Sciences
15. **Mauritius** Academy of Science and Technology (MAST)
16. Hassan II Academy of Science and Technology in **Morocco**
17. Academy of Sciences of **Mozambique** (ASM)
18. **Nigerian** Academy of Science (NAS)
19. **Rwanda** Academy of Sciences (RAS)
20. Académie des Sciences et Techniques du **Sénégal** (ANSTS)
21. Academy of **Science of South** Africa (ASSAf)
22. **Sudanese** National Academy of Science (SNAS)
23. **Tanzania** Academy of Sciences (TAS)
24. Académie Nationale Des Sciences, Arts Et Lettres Du **Togo** (ANSALT)
25. **Tunisia** Academy of Sciences Arts and Letters
26. **Uganda** National Academy of Sciences (UNAS)
27. **Zambia** Academy of Sciences (ZaAS)
28. **Zimbabwe** Academy of Sciences (ZAS)

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