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Science*Policy*Africa is a quarterly newsletter of the African Academy of Sciences which carries information on all sciences, technology and innovation (ST&I) and policy issues. The Newsletter also presents the activities of the AAS to the global ST&I community and provides a forum to present policy makers with facts that will inform decision making. Views and opinions expressed in this newsletter are those of the authors and do not necessarily reflect the official policy or position of the AAS

EDITORIAL

Ebola outbreak: a wake-up call

The African Academy of Sciences lauds efforts by the medical and social scientists from around Africa and the world who are battling the outbreak of Ebola Virus Disease (EVD) to save lives especially in three worst affected countries of Guinea, Sierra Leone and Liberia.

The Ebola outbreak threatens to reverse real and positive gains that have been achieved over the last decade on the continent in public health and disease control. For example, according to the "World malaria report 2013" of the World Health Organisation (WHO), global efforts to control and eliminate malaria have saved an estimated 3.3 million lives since 2000, reducing malaria mortality rates by 45% globally and by 49% in Africa.. A 2013 report from the Joint United Nations Programme on HIV/AIDS (UNAIDS) also showed that the world was making great progress in the fight against HIV transmission and halting AIDS-related deaths. In sub-Saharan Africa where HIV-AIDS has been a serious problem, 1 million fewer people acquired HIV in 2012, a drop of almost 40% over the previous year. So, at a time when the world and African governments seem to be making progress in addressing HIV-AIDS and malaria, this outbreak of Ebola in West Africa is a rude awakening that more work is still needed.

This is the worst Ebola crisis to hit the continent. Close to three thousand are dead, more than 20,000 could be infected by early next year, and nearly 1.5million are at risk unless major interventions and a global concerted effort begins to make a mark. In an effort to interrupt further spread of the virus in the shortest possible time, the World Health Organization convened a special meeting of Ministers of Health of eleven countries and partners involved in the Ebola outbreak response in Accra, Ghana from 2-3 July 2014. This meeting discussed the best ways of tackling the crisis collectively as well as how to develop a comprehensive inter country operational response plan. The meeting identified lack of coordination of the outbreak, financing, communication, inefficient cross border collaboration, logistics, poor case management and infection control, surveillance, contact tracing, community participation and research as gaps and challenges.

These challenges are not new. Consider financing: in the Abuja Declaration of April 2001 heads of state of African Union countries met and pledged to allocate at least 15% of their annual budget to improve the health sector, support vaccine development, to make medical commodities and technologies more available, etc. Health funding has risen in Africa since 2001, but it still has not reached the level that the Abuja Declaration promised. Six AU Member States (Liberia, Madagascar, Malawi, Rwanda, Togo and Zambia) have achieved the Abuja target of allocating 15% of public expenditure to health, and a number of other countries (e.g. Djibouti, Ethiopia, Lesotho and Swaziland) are within reach of the 15% target.

The outbreak of the Ebola Virus Disease in parts of West Africa, has again demonstrated the importance of multidisciplinary approach to solving our problems. The disease outbreak is not just a medical emergency but also a public health issue. There are also economic issues, trans-boundary and migration issues, legal , diplomatic and social issues that have come to the fore.

The African Academy of Sciences would like to remind African countries and governments that they have the primary responsibility of allocating sufficient resources to strengthen health care systems, training of medical personnel to meet the huge shortages that have been exposed by this crisis; creating systems for emergency response and disaster preparedness; and supporting research as the only source of evidence based interventions. . There is a lot the continent can do even as we look for external support to manage this crisis. For example, logistics have been slow to get to the most affected areas, no doubt because of the initial slow response all round to acknowledge the crisis. Key decisions to deal with the crisis have not always been taken on the basis of the best scientific evidence; African businesses have taken decisions to suspend operations in the affected countries, including airline connections, which have compounded the problems of logistics and movement of health workers. Deep-rooted cultural practices have been exposed as a major contributor to the escalating infection rates, but this has not been matched with rigorous education and public awareness campaigns.

Despite this we must laud the commitment of individuals doctors, health workers, laboratory technicians, many of who have paid the ultimate price while trying to save lives; and one major African institution, the African Development Bank has committed $60miillion to Ebola control efforts to compliment the generous support given by various global governments and non-governmental organizations.

This is wake-up call for African governments, scientists, businesses etc to rise to our stated commitments. The AAS is ready to partner with all players to deal with both short-term control measures as well as long-term issues of health facilities, emergency response, disease surveillance and development of tools such as vaccines and drugs. We are ready to stand and be counted and to address the health challenges of our continent.

Message from the President

It is my great pleasure to write this message for this edition of the AAS newsletter. I am very happy to report that we did have our Governing Council (GC) meeting, July 24-25 2014, during which we took so many decisions that will propel AAS to greater heights.

Our GC indeed decided to strengthen existing partnerships and build new ones. We have since had a meeting with the AUC commissioner in Addis-Ababa to formalize AAS relationship with the AUC and we are hoping that an MOU will soon be signed between AAS and AUC. AAS, in cooperation with NEPAD, is in the process of setting up a big platform AESA--Alliance for Excellence in the Sciences in Africa-- that includes such partners as Bill and Melinda Gates Foundation, Welcome Trust, DFID etc. This is a pan-African Platform which will develop long-term STI research capabilities and excellence in Africa, especially among the youth with the overall aim of achieving Africa's sustainable developmental goals. The platform will at first focus on health research and later go on to cover other areas.

In the direction of having closer working relationship with other Academies, AAS has recently signed an MoU with the Nigerian Academy of Science (NAS) and a joint conference /workshop on ICT is planned for 2015 in Nigeria, with the co-operation and support of the Nigerian Federal Ministry of Communications Technology. We have also succeeded in reviving the fourteen year old dormant MoU between AAS and the Korean Academy of Science and Technology (KAST) with the result that the first bilateral AAS-KAST Symposium is already scheduled to take place on the topic, "Recent Advances in Bio-Sciences and Bio-Technology for Socio-economic development" July 6-7 2015, at the AAS Secretariat in Nairobi.

As anticipated in my last message, we have continued our capacity building programmes. As a follow-up to the successful workshop on "Stem Cell and Regenerative Medicine " which took place November 11-13, 2013, another successful one took place August 4-7 2014 also with the presence of resource persons and mentors for our young scientists from Africa, China, India and Brazil. We are also continuing capacity building on CIRCLE—Climate Impact Research Capacity and Leadership Enhancement-with the generous support of the United Kingdom Department for International Development (DFID). This support includes the award of 100 Fellowships to young scientists for the purpose of improving their skills in various aspects of climate impact research.

Our GC has also approved several activities that are intended to raise AAS visibility as well as popularize Science on our dear continent. We now have four AAS Commissions: 1) AAS Commission on Science Education; 2) AAS Commission on Pan-African Science Olympiads, 3) AAS Commission on African Scientific Heritage and 4) AAS Commission on Women in Science in Africa. In fact, we are in the process of organizing in Nigeria the first AAS Pan-African Science Olympiad in 2015. Beyond the usual conferences/workshops organized centrally by AAS, our GC has approved the involvement of AAS in several scientific activities organized by AAS members in various sub-regions provided that such members invite such AAS involvement. This way, AAS will have more visibility all over the continent since AAS logos will appear at the websites and in announcements of such conferences/workshops. We have also established Regional offices where the Vice-presidents for the sub-regions are located. This will facilitate the sub-regional activities, including the organization of the Affiliate membership programme.

Our GC has also intensified our efforts to raise funds for AAS Endowment fund. All GC members are currently making effort to get their Governments to contribute to the fund and we should very much appreciate such efforts from other Fellows of AAS who are non-members of the GC. Once such Fellows make their intention known, we shall co-operate to get appropriate letters written to the Heads of State of the countries concerned. We are also approaching the private sector – multinational and successful indigenous companies as well as wealthy individuals all over the continent for contributions. I do hope that some of our efforts will yield fruitful results.

On the whole, we are doing our best as members of the GC to move AAS forward, and I like to renew my appeal to all fellows of AAS to help us achieve our goals by actively participating in AAS activities and offering their services to AAS whenever they are called upon to do so.

Prof Aderemi Oluyomi Kuku, President, AAS

Prof Kevin Marsh joins AAS on AESA platform

The African Academy of Sciences has appointed Prof Kevin Marsh as Senior Advisor to the Alliance for Accelerating Excellence in Science in Africa (AESA) --- a platform to leverage funding for science and research in Africa. Kevin Marsh is a Professor of Tropical Medicine at the University of Oxford but has been based in Kenya for the last 25 years where he was Director of the KEMRI Wellcome Trust Research Programme until August this year.

Professor Kevin Marsh has a broad research interest in child health in the tropics, with a particular focus in the immune epidemiology of malaria. As well as directing the KEMRI Wellcome Programme in Kenya, Kevin also coordinated the KEMRI Molecular Parasitology group. The Programme's research focuses on major causes of ill health in Kenya and the region including malaria, pneumonia, HIV and malnutrition as well as having an emerging interest in non-communicable diseases. Kevin has a particular interest is in capacity building for science in Africa and was responsible for securing a major strategic award, from the Wellcome Trust, to support doctoral and post-doctoral career development for East African Scientists.

A graduate of the University of Liverpool, Prof Marsh began his research career at the Medical Research Council Unit in the Gambia. From 1985-89, Prof Marsh was at the Institute of Molecular Medicine in Oxford and in 1989, jointly with others, established a series of research projects on the clinical epidemiology and immunology of malaria at Kilifi on the Kenyan Coast. These have subsequently developed into an international programme involving around 800 staff working across a number of countries in east Africa.

Prof Marsh's work on Malaria have made him a member of a number of international advisory committees relating to malaria and to global health research. Besides being the Chair of the WHO Malaria Policy Advisory Committee, Prof Marsh is also professor of tropical medicine at the University of Oxford. He has sponsored or supervised over 40 research fellows and doctoral students. Kevin was elected a fellow of the Academy of Medical Sciences in 2004 and was awarded the Prince Mahidol prize for medicine in 2010.

In his new capacity with the AAS, Professor Marsh, will further build upon his interest in developing and strengthening research capacity and scientific leadership in Africa on the AESA platform. The AESA platform is a partnership of the African Academy of Sciences with NEPAD, Wellcome Trust UK, UK's Department for International Development (DFID) and the Bill and Melinda Gates Foundation.

The new platform that Prof Marsh moves into will initially focus on health research, and later expand to other areas such as food and nutrition, energy, and environment. This pan-African platform offers an opportunity for long-term development of research leadership, scientific excellence and innovation which impacts on global health and development.

It is envisaged that such a platform, which would be Africa-led, African-centred and Africa-specific in its agenda for strategic research and development, will forge strong alliances globally with organizations that have similarly aligned objectives and interests. It will capitalise on increasing African commitments to science and technology as highlighted in the Declaration of African Head of States (2007), the Algiers Declaration (2008), the Bamako Call for Action (2008) and in the African Union (AU)'s Science, Technology and Innovation Strategy for Africa (STISA) 2024.

The AESA platform will identify challenges that hinder rapid scientific advancement in Africa, run open calls for proposals with transparent review processes, actively manage grants and evaluate and measure the impact of such investments. Recognizing that more than 60% of the continent's population is youthful, the platform will develop youth-centred programs such as early and mid-career fellowships to inspire young people and engage them to contribute intellectually and practically too critical areas of STI for Africa's development.

The platform is expected to begin to run at least two pan African funding initiatives during the course of 2015. AESA will be hosted by the AAS at its Nairobi headquarters.

From the ED's Desk

Let me use this opportunity to share with Fellows of AAS and our readers some of the recent and upcoming events of AAS. The 9th GA held last April in Brazzaville led to the election of new members of the Governing Council where nine of the 14 members are new. It became immediately apparent that moves had to be made quickly to bring the new members (some of whom are even new Fellows) up to speed with the affairs of the Academy.

Each member of the GC was sent the core documents of the Academy (Constitution, Strategic Plan, Key policy documents, and copies of the Newsletter of the Academy). In addition, a two-day physical meeting of the AAS Management Committee (MC) was organized in Nairobi in June. The MC meetings are usually virtual meetings but there was a need for a physical meeting to kick-start the work of the new MC. A full meeting of the Governing Council was also held in July. Although the regular meeting of the GC is held alternatively with either the five Vice Presidents or the five Regional Representatives, it was considered necessary to have a full meeting of ALL the 14 members. The turnout was impressive with only one Vice President sending apologies. The GC had a huge agenda and made very important decisions. The attendance of the immediate-past president (who continues as a regular member of the GC) contributed to providing clarifications to the many queries that were posed by the new GC members. The GC listened and made important decisions and recommendations. I believe that it would be good if a summary of those decisions are circulated to the Fellows of the Academy, a point I wish to submit to the Management Committee of the GC.

This is the second year after the adoption of the 2013-2018 Strategic Plan of the Academy. In the area of "recognizing excellence", I believe we are on track in most areas. These will be even more enhanced with the new initiatives introduced by our new President and approved by the Governing Council. On the side of "Programmatic Activities", we are also doing well but there are areas that we need to work harder. Two overall key features of the Strategic Plan are "positioning AAS for better impact in Africa" and "Nurturing Africa's emerging talent" and it is these concerns that we are working very hard to address. I am happy to report that our relations with the AUC are developing ever more strongly with 40% of the Pan African University (PAU) High Panel occupied by AAS Fellows recommended by the President and preliminary discussion underway to make formal and institutional arrangements that designate AAS as a Strategic Partner of the Commission. AAS is now also well-known among many of the Regional Economic Communities (RECs) and other pan-African and regional bodies.

It is very gratifying to acknowledge the increasingly important role that AAS fellows are playing in the functions of the Academy. The success of our various efforts often requires the input of our fellows. AAS Fellows are serving in various standing as well as ad-hoc committees that we set up from time to time. I would like to appreciate all of you who have responded positively when we asked you to join various committees and more importantly for respecting our deadlines, some of which have required you to do huge tasks urgently, as was the case when we needed your help in reviewing project proposals of CIRCLE Fellowship candidates.

One of the new exciting developments of AAS is the proposal to set-up an Africa-wide funding platform, called Alliance for Accelerating Excellence in Science in Africa (AESA). Plans for setting up this platform have advanced significantly and we are pleased to announce that there is considerable moral and fiscal support pledged for it from major funders as well as African sources. In this regard our negotiations with funds such as the Wellcome Trust, DFID and the Bill and Melinda Gates Foundation are well advanced and we hope to issue a formal communique in due course.

Let me conclude by acknowledging TWAS for extending funds that goes to the production of this Newsletter.

Prof Berhanu Abegaz
Executive Director, AAS

2nd Stem Cell and Regenerative Medicine Mentoring Workshop held at AAS

In the minds of many people, heart disease, stroke, cancer, diabetes and other chronic diseases are often considered public health problems of significance only in high income countries. But this is not true! Only 20% of chronic disease deaths occur in high income countries - while 80% occur in low and middle income countries.

The estimated number of chronic disease-related deaths in the WHO African region in 2005 was 2,446,000. But chronic diseases are now projected to account for a quarter of all deaths in Africa by 2015. WHO projects that 28 million people in the Africa Region will die from a chronic disease over the next 10 years and the rate of increase of deaths from chronic diseases will outstrip that from infectious diseases, maternal and perinatal conditions and nutritional deficiencies more than 4-fold in the next 10 years. Most significantly, deaths from diabetes will increase by 42%. It is for this reason that the three day mentoring workshop was organized as part of the AAS mandate to develop the capacity of young African Scientists in this frontier science.

In April 2011, ministers of Health and Heads of Delegation of the WHO African Region convened at a Regional Consultation on the Prevention and Control of Noncommunicable Diseases (NCDs) in Brazzaville, Congo. At the end of the meeting, THE BRAZZAVILLE DECLARATION ON NONCOMMUNICABLE DISEASES PREVENTION AND CONTROL IN THE WHO AFRICAN REGION came out. The Ministers took cognizance of the ever increasing double burden of communicable and non-communicable diseases in the WHO African Region and the associated disabilities and premature deaths. They being aware of the significant evidence regarding the burden of NCDs in the WHO African Region declared that amongst other things that "Partnerships, alliances and networks bringing together national, regional and global players including academic and research institutions, public and private sectors and civil society organizations should be encouraged and supported in order to collaborate in NCD prevention and control and to conduct innovative research relevant to the African context". They also indicated their commitment to develop integrated national action plans and strengthen institutional capacities for NCD prevention and control.

In doing its bit to make real the Brazzaville Declaration, the African Academy of Sciences (AAS) and its partners organized the second mentoring workshop on Stem Cell and Regenerative Medicine for young African Scientists in Nairobi from 4 - 6 August 2014. The young scientists from across Africa are being mentored in ways of using regenerative medicine or stem cell therapy to help prevent the increasing cases of non-communicable diseases.
The goal of the workshop was to develop knowledge and skills in stem cell biology and regenerative medicine among the selected African scientists and provided an opportunity for networking with a multidisciplinary team of experts from the African continent and other leading middle-income countries particularly China, Brazil, and India.

Prof Dorairajan Balasubramanian, Director of Research, L. V. Prasad Eye Institute in Hyderabad, India; one of the mentors at the mentoring and training workshop

Prof Aderemi Kuku, the AAS President said in a speech read on his behalf that the AAS is committed to promote science and technology for development in Africa. The Executive Director of AAS, Prof Berhanu Abegaz also added that the academy hopes to increase its efforts in this field to improve understanding of regenerative medicine to address health concerns that are specifically relevant to Africa. He added that stem cell therapy could help in effective treatment of NCDs and increased effort in this direction needs the support of all.

Prof. Omu Anzala, Director of the Kenya Aids Vaccine Initiative (KAVI) said time has come for Africa to be involved. He disclosed that the University of Nairobi will commence stem cell projects in five months' time. Prof. Anzala concedes that lack of interest and limited funding has been the main handicap stunting the development of stem cell therapy in the African continent.


Section of the mentees at the laboratory during the mentoring and raining workshop in Nairobi

Prof. Zul Premji, chairperson of the Aga Khan University Department of Pathology explains that the whole idea is to reduce chronic treatment of diseases. Instead of transplant, one's own stem cells can be used to replace any organ that is failing.

Key resource persons at the mentoring and training workshop included Prof Dorairajan Balasubramanian, Director of Research, L. V. Prasad Eye Institute in Hyderabad, India; Prof. Vivaldo Moura-Neto, Director of the Cellular Morphogenesis Laboratory, Institute of Biomedical Sciences, Federal University of Rio de Janeiro in Rio de Janeiro, Brazil; Dr. Anjali Shiras, National Centre for Cell Sciences, India; Prof Omu Anzala, KAVI-Institute of Clinical Research, Kenya; Prof Susan H. Kidson, University of Cape Town, South Africa; Dr Venant Tchokonte-Nana, Stellenbosch University, South Africa; and Dr Hiba B.K. Ahmed, Al Neelain University, Sudan.

This mentoring and training workshop is the second to be held by AAS. The first one was organized in 2013. The workshop was funded by IAP – The Global Network of Science Academies, the World Academy of Sciences (TWAS) and the Kenya National Commission for Science, Technology and Innovation (NACOSTI).


Practical training and mentoring at the workshop in Nairobi

African Universities should Prioritize Research for Development

Global university rankings measure how universities perform based on a range of indicators. The most influential ones focus heavily on research, using criteria such as academic reputation surveys and citations in international or high-impact journals. These criteria are general for all universities and not necessarily context-specific. However, the different contexts within which universities find themselves should place another layer of responsibility or criteria to measure the influence of these institutions.

In African universities, a major priority/ responsibility should be research to solve the myriad development challenges facing the region; communicating their findings appropriately to stakeholder groups (which may not be about publishing in high-impact journals); and engaging with the wider community to meet internationally agreed development goals.

These priorities should not necessarily fit the criteria for global rankings.

But African universities face enormous challenges in promoting research to support development, especially through doctoral education.

Too few doctoral students

One such challenge is promoting doctoral-level education. Most African countries are following a higher education strategy that focuses mainly on increasing undergraduate student enrolment. But it needs to be approached with caution.

As a result of this strategy, the massive increase in student enrolment over the past couple of decades has not been accompanied by a proportionate increase in academic staff. This has brought heavy teaching loads, leaving academic staff little time for research. And it has dented the quality of education received by students who graduate from their first degree, and are the potential postgraduate students.

Also, most public universities find it difficult to recruit new staff, or even retain existing ones, because of poor salaries. And the proportion of current academic staff holding a PhD is very low, so the capacity to initiate research and supervise doctoral students is already weak.

The obstacles don't stop there. Most universities lack an institutional policy and strategy for research, and their structure for managing doctoral students is either weak or non-existent. For example, accurate data on PhD enrolment and research projects are rarely available in African universities.

Doctoral research is therefore very much a personal enterprise. Researchers need to secure funding for their work, and use the findings for their own promotion through publications in international journals. Rarely do their results, even when relevant to development, reach the appropriate community or inform policy.

Missions and management

African governments can take several initiatives to both improve research capacity and boost postgraduate education. First, they should abandon the approach of creating new universities in the existing model, or upgrading technical colleges and polytechnics to universities. Tertiary education needs 'mission differentiation'.

In practice, this means that governments should support some of their existing universities to become research-strong institutions running Master's and PhD programmes while also offering undergraduate courses. Most staff should have a PhD and should be freed from heavy teaching loads so they can undertake research.

The other tertiary institutions should place greater emphasis on the equally important mission of teaching and learning at undergraduate level. Only then can quality research really flourish in African countries. It would be impossible, and unnecessary, for most staff in all tertiary institutions on the continent to have a PhD.

African universities should also develop a clear research policy and strategy. This should be closely linked to their country's development needs and in line with their institution's priority subjects and capacity. All doctoral research should be aligned with identified development areas.

Each university will also need a central unit to manage research and postgraduate education — to decide on financial incentives for students and supervisors, for example, and run training seminars. Such a unit would not supersede the department's academic role but would complement it in administrative matters.

In addition, postgraduate students should be required to prepare a simple, concise brief of their findings and recommendations, aimed at the end-user community or at policy makers. At present, most results get published in academic journals, or appear in theses on library shelves: in both cases findings are inaccessible to the people who need them.

In addition, postgraduate students should be required to prepare a simple, concise brief of their findings and recommendations, aimed at the end-user community or at policy makers. At present, most results get published in academic journals, or appear in theses on library shelves: in both cases findings are inaccessible to the people who need them.

Money matters

Lack of funds is another major constraint. African governments don't put enough money into research; and at institutional level the funds allocated to institutions get absorbed by salaries and teaching provision. So most research in African universities is funded by external donors. Given the financial situation facing most African countries, this is likely to continue.

There are many opportunities to apply for competitive research grants but African academics lack experience in applying for them — so training is urgently needed.

The limited funding translates to poor infrastructure and human resources for research. Regional collaboration and networking, as supported by most development agencies and donors, have a key role to play in overcoming these challenges.

For example, the Consortium for Advanced Research Training in Africa (CARTA), funded by several donors, links universities and research organisations with equivalent institutions in more developed countries, and supports doctoral training in health and development. Similarly, the Regional Initiative in Science for Education (RISE), funded by the Carnegie Corporation of New York, supports networking to help African universities build research capacity and develop postgraduate studies in key development areas such as water resources and biotechnology.

African universities need reforms that promote research. But these reforms should extend to putting the research to practical use — research in Africa should not be undertaken merely to generate knowledge but also to help promote sustainable development. Any attempt to boost research in African universities that simply aspire to global rankings would not only waste scarce resources but would also be inappropriate, given the need to address development challenges.

EDITOR'S NOTE: *"This article is submitted to "Science*Policy*Africa" by Prof Goolam Mohamedbhai. These thoughts were first published in SciDev.Net on 25 June 2014 (http://www.scidev.net/global/education/opinion/research-development-academic-rankings.html) where it generated a lot of interesting online discussion and was also picked up by the Commonwealth of Learning who asked the author to write an article on Developmental Research for their Journal of Learning for Development (J4LD).*

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Discovery of novel phragmalim limonoids and their biological activities

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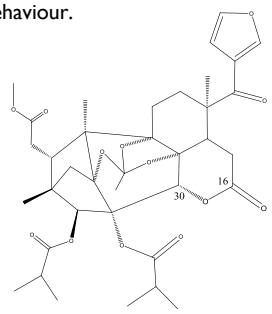
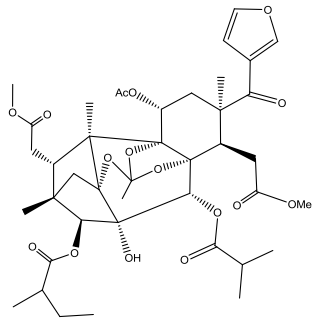
In an interview published by the magazine *Le Nouvel Observateur* in 1994, Dr Pierre Potier, CNRS Gold Medal and discoverer of the anticancer drugs taxotere and navelbine, said: "*The brain will be a challenging problem of the 21st century*". The brain is the most complex part of the human body. This organ is the seat of intelligence, interpreter of the senses, initiator of body movement, and controller of behaviour. For centuries, scientists and philosophers have been fascinated by the brain, but until recently they viewed the brain as nearly incomprehensible. Now, however, the brain is beginning to relinquish its secrets. Scientists have learned more about the brain in the last 20 years than in all previous centuries because of the accelerating pace of research in neurological and behavioural science and the development of new research techniques. Particularly, the discovery of pharmacological agents that can influence brain behaviour may give new opportunities to understand the biological basis for brain behaviour, as well as new therapies for treatment of brain dysfunction.

In a screening programme directed towards the discovery of drugs that could enhance sexual activity, we found that the decoction of root barks of *Neobeguea mahafalensis* (Meliaceae) did not show any activities during the first three hours, but after three day consecutive treatment displayed an unprecedented high potency and remarkable long duration in augmenting sexual activity in male rodents. Extensive research aimed at isolating the biologically active constituents of the root barks and elucidating their structure led to the discovery of a new class of phragmalin limonoids to which we have given the name Libiguins A-B (Figure 1a), with unprecedented C-16/30 d-lactone ring [1]. *In vivo* pharmacological tests showed that, starting from at 0.04 - 0.4mg/kg, they had delayed and long-lasting effects on mating behaviour in experimental animals [2]. To the best of our knowledge, this is the first time that limonoids are reported to have such an effect. Our accumulated data show that through the discovery of the libiguins we have reached a previously unknown regulatory system of sexual behaviour on the track. This is a groundbreaking new neurobiological discovery that opens a way for the detailed mapping of the central regulation of sexual behaviour, a regulatory system that is still very incompletely understood. The long lag-phase until an effect is seen and the long duration of effect support the idea that the libiguins act trophically on an endogenous sexual regulatory system. Also the extremely high potency of the libiguins supports the idea. In fact we do not know of any other compound that can be given in microgram quantities for a short period of time and then induce such profound and long-lasting change of sexual behaviour.



1a: Libiguin A



1b: Dodoguin

Figure 1. Structures of bioactive constituents of *Neobeguea mahafalensis*

The chemical diversity among compounds from natural sources is astounding. Only *Neobeguea mahafalensis* from which we isolated the libiguins contains hundreds of different small molecular weight compounds, secondary metabolites, with drug like properties. During bioassay-guided fractionation, we observed that two fractions unexpectedly displayed sleep-induced effects. We isolated the major active constituent we named Dodoguin, and its chemical structure was elucidated (Figure 1b).

The original plant contains only minute amounts of libiguins. However, our extensive research led forward to a method to synthesize libiguin A and its analogues in larger quantities by trans-lactonisation of phragmalin. Phragmalin is a limonoid present in high amounts in the seeds of a commercially cultivated *Chukrasia tabularis*, allowing the preparation of libiguins in appreciable quantities [3].

We tested all intermediates for sexual activity enhancing effects in rat models. Surprisingly, one derivative we named Gidraguin showed strong aggressive effects. Several derivatives were patented for use for eliciting a sexual enhancing or aggression effect or for treatment of any one of sexual dysfunction, hypoactive sexual desire disorders, psychiatric disorder and neurological disorder [4].

These serendipity discoveries using *in vivo* animal models can lead to novel therapies for treatment of sexual dysfunctions. Moreover, they can serve as biochemical tools for an entry in the elucidation of the brain behaviour, and also treatments for psychiatric and neurological disorder.

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Formaldehyde Confirmed as Known Human Carcinogen

- National Academy of Sciences

A new report from the National Research Council has upheld the listing of formaldehyde as "known to be a human carcinogen" in the National Toxicology Program 12th Report on Carcinogens (RoC). The committee that wrote the Research Council report found that the listing is supported by sufficient evidence from human studies that indicate a causal relationship between exposure to the chemical and at least one type of human cancer. The committee reached the same conclusion after conducting both a peer review of the RoC and an independent assessment of the formaldehyde literature.

The NTP is an interagency program that produces the RoC. Formaldehyde is a substance of interest for the RoC because many people in the United States are exposed, either through environmental sources such as combustion processes and tobacco smoke, or in occupational settings that include the furniture, textile, and construction industries. Formaldehyde is also produced naturally by human cells. It was first listed by NTP as "reasonably anticipated to be a human carcinogen" in 1981 before being upgraded to "known carcinogen" in the 2011 RoC.

Based on RoC listing criteria, a substance can be classified as known to be a human carcinogen if there is sufficient evidence of carcinogenicity from studies in humans that indicate a causal relationship between exposure to the substance and human cancer. In its peer review of the RoC, the Research Council committee found that NTP described the strengths and weaknesses of relevant studies in a way that was consistent and balanced, but noted that it would be more complete if it also discussed why weaker evidence did not alter the conclusion.

In addition, NTP did not include a description of its interpretation of "limited" and "sufficient" evidence for human studies, which factors into whether a chemical is listed as reasonably anticipated to be or known to be a human carcinogen. The Research Council committee defined "limited evidence" in humans to be two or more studies of varied design that suggest an association between formaldehyde and a specific type of cancer but that cannot exclude alternative explanations such as chance, bias, or confounding factors. Evidence was deemed to be "sufficient" if those alternative explanations could be ruled out with confidence. On this basis, the committee agreed that there is sufficient evidence to support an association between formaldehyde and cancer in humans.

In its independent assessment, the committee considered human, animal, and mechanistic studies published through November 8, 2013 that focused on nasopharyngeal cancer, sinonasal cancer, and myeloid leukemia. It found sufficient evidence of carcinogenicity in human and animal studies and "convincing relevant information" that formaldehyde induces mechanistic events associated with the development of cancer in humans. Based on these findings, the committee concluded that formaldehyde should be listed in the RoC as "known to be a human carcinogen."

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Increasing women in AAS Fellowship

In 2011, the African Academy of Sciences (AAS) had 183 fellows, and only three of them – less than 2% – were women. The Academy saw this as a serious problem that needed to be addressed without delay at all. It was one task that the then newly appointed Executive Director Prof Berhanu Abegaz and the AAS Governing Council led by then President Prof Lamine Ndiaye looked at how to execute an effective programme to get that number to grow, and do it fast. The solution was: Recruit more fellows and more women without sacrificing quality. Three years later, AAS has 17 women listed among its 266 fellows, over 6%.

The increase in the number of women Fellows of AAS has reflected in the leadership of the academy as well. Three years ago, there was no woman in the 14-member Governing Council of the AAS. But today there are 3 women who are members of the Governing Council of AAS, raising their representation to 20% from 0%. This is how serious the academy has tackled the issue of low women participation in the AAS. Now it should be even easier to increase the number of women in the AAS Fellowship.

Surely there has been some modest gains but the academy acknowledges there is still a long way to go. AAS has targeted an increase of its Fellowship to 600 active scientists by end of 2018 with not less than 15% of this number being women. The academy is planning to expand not only its gender diversity, but also its diversity across nations and in scientific fields such as climate change. The academy also wants to acquire representation from all 54 African countries and the African diaspora.

The AAS really believe that women are under-represented in the academy. The academy is working hard to identify excellent African women scientists and award them AAS Fellowship and work with them to increase the number of girls and women in science in Africa. AAS looks out for programs, conferences, that focus on women, where excellent Africans are found. Prizes, such as the African Union Regional Prize for Women Scientists and the UNESCO L'Oreal Prize, are useful sources for finding Africa's brightest women researchers, and the academy is not only interested in the winners, but those who are on the short lists.

The African Acdemy of Sciences also wants to attract scientists from fields that are currently low in numbers in Africa, such as climate science, information and communications technology, energy and nutrition. increasing diversity has great benefits for the academy's credibility as a scientific organization. By bringing together people of different backgrounds, disciplines and expertise, it creates a culture in which creative solutions can emerge to difficult problems that science and engineering are trying to solve in Africa. Among those challenges are creating sustainable energy sources and adapting to climate change, which will have a powerful influence on the continent's development

PICTURES:
From Top: Prof Quarraisha ABDOOL-KARIM, AAS Vice President for Southern Africa; Prof Boitumelo KGAREBE, AAS Regional Representative for Southern Africa; Prof Ameena GURIB-FAKIM, AAS Regional Representative for Eastern Africa

"Africa Rebooted: Science Technology, and Innovation in Development"

3 AAS fellows were part of the panel at the forum titled "Africa Rebooted: Science Technology, and Innovation in Development." they were of part of High-ranking African leaders in science, technology and innovation met at MIT on September 23 and 24 to explore areas for mutual cooperation. The AAS Fellows included Professor Aderemi Kuku, President of the African Academy of Sciences; Dr Aggrey Ambali, Head of Science Technology and Innovation Hub at NEPAD); and Prof Calestous Juma, Dr. Martin Luther King, Jr Visiting Professor at MIT who moderated the event.

The public event hosted by the Center for International Studies and the Department of Urban Studies and Planning on Wednesday, September 24, 2014, at the Massachusetts Institute of Technology (MIT) was attended by MIT Vice President Claude Canizares and Professor Hazel Sive, Coordinator of the MIT-Africa Program (at MISTI).

In June 2014 African presidents adopted a 10-year Science, Technology and Innovation Strategy for Africa (STISA-2024). The strategy is part of the long-term Agenda 2063, which outlines the need to "consolidate African initiatives and strategies on accelerated human capital development, science and technology and innovation." Agenda 2063 calls on Africa to "lead the new industrial revolution by building a skilled workforce, capitalizing on the digital revolution and global knowledge." In pursuing this vision, the African Union emphasizes the importance of building up its universities as centers of excellence.

To help implement STISA-2024, African countries are exploring a variety of partnerships with leading science and technology universities around the world. The aim of the MIT visit is to explore areas of potential cooperation between MIT and African countries in areas of science, technology and innovation, according to Professor Calestous Juma. The forum shed light on emerging trends in Africa.

New paper suggest new index rather than *h-index*

Prof Mahmoud Abdel-

Classifying researchers' work according to the quality of their publications rather than the quantity of their publications is an important issue. To this end, a new paper by AAS Fellow Prof Mahmoud Abdel-Aty introduces a new measure, the "percentage range" or A-index, which provides a qualitative evaluation of a researchers' productivity. The percentage range depends to a great extent on the number of single-author published papers and their citations. It is to be a new index to be considered along with the h-index. The combined factors have the advantage of making clearer the innovation of the individual authors. The resultant percentage range gives a reduced impact on its numerical value for authors who gain citations by adding their names on multi-author papers. It is shown that various dimensions of ethical integrity and originality are clarified by the new index. The important scenarios arising from this analysis are demonstrated with examples. The great differences between the new percentage range and old h-index come from the percentage range's emphasis on considering the whole work of an author, including the significance of the author's single-author papers as opposed to multiple-author contributions. This emphasis is demonstrated. The paper is published in JOURNAL OF COMPUTER TECHNOLOGY & APPLICATIONS. Prof Abdel-Aty is renowned for his research in applied mathematics, quantum information. He is a Fellow of AAS and the AAS Vice President for Northern Africa. For more information, contact Prof Mahmoud Abdel-Aty at abdelatyquantum@gmail.com

EBOLA VIRUS OUTBREAK: AFRICA AT THE CROSSROADS

URGENT NEED FOR A PAN-AFRICAN BIOMEDICAL RESEARCH INSTITUTE.

Several African countries are currently dealing with the deadliest Ebola outbreak. Among the causalities, a Liberian senior doctor, Samuel Brisbane (1, 2). The outbreak started in Guinea between 2013 and 2014, has spread to Sierra Leone, Liberia, and some major capital cities for the first time. The first Ebola outbreak (Zaire Ebola virus) dated back in 1976 (1).

What is Ebola Virus Disease (EVD)

Ebola virus disease (EVD) or Ebola hemorrhagic fever (EHF) in human is caused by the Ebola virus. The symptoms start two days to three weeks after contracting the virus and include: a fever, sore throat, muscle pains, headaches, nausea, vomiting, diarrhea, decreased functioning of the liver and kidneys, and bleeding problems (3).

The diagnosis OF Ebola Virus is done through the isolation of the virus, detection of the virus Ribonucleic acid (RNA), or proteins, or detection of antibodies against the virus in blood. Early detection methods include: The Isolation the virus by cell culture, detection the viral RNA by polymerase chain reaction (PCR) and detection of the virus proteins by enzyme-linked immunosorbent assay (ELISA) (4, 5).

Currently, no specific treatment for the disease is available. Giving either oral rehydration therapy (slightly sweet and salty water to drink) or intravenous fluids are currently efforts to help a person infected by Ebola virus (3). Ebola virus has high mortality rate between 50% and 90% (3, 4).

Why is Ebola outbreak so deadly in Africa?

The first reason Ebola virus is so deadly is the virus has developed a systems that enables it to evade much of the human immune system. In addition, white blood cells of the immune system in patients often die. This prevents the patient's body to fight back the virus. Furthermore, there is a lack of adequate training of Africa's health workers (2).

The Urgent Need for a Pan-African Biomedical Research Institute

As stated earlier, Ebola virus first outbreak dated back in 1976. Therefore, a simple question to ask is; why in 2014, African countries completely still rely on developed countries to deal with Ebola Virus Outbreak? Why has the continent not invested in research and research facilities to study Ebola virus for the purpose of developing a vaccine or a treatment for Ebola disease? In 2014, we should boast an adequately well-resourced laboratory or institution in Africa to deal with Ebola virus and others challenging diseases. Healthcare plays an important role in economic growth of countries. But after analyzing the development program in most of African countries nothing has been done in order to stimulate Biomedical Research and improve Africa's healthcare system. Limited resources is one of the common arguments most of African countries use as an excuses for not investing in biomedical research. So, what can be done to help these countries to improve their healthcare system, and to develop their Biomedical Research units?

How to Improve Biomedical Research in Africa

Biomedical research requires a lot of resources. It requires human resources, financial resources, and equipment. Therefore, it is extremely difficult for most of African countries to invest individually in world class Biomedical Research. The best way to improve biomedical research in Africa is to invest in regional Biomedical Research Institutes or a Pan-African Biomedical Research Institute. These regional or Pan-African Biomedical Research Institutes in addition to establishing a research collaboration with developed countries should put systems in place to attract world-class scientists.

Financing of these regional or Pan-African Biomedical Research Institutes should be one of the priority projects of the African Union. The African Union should require its member States a mandatory annual contribution (Percentage to be determined) to fund these Pan-African Biomedical research Institutes.

Improving Biomedical Sciences Education in Africa: The role of Africa Diaspora

It is difficult for most of African Universities to have biomedical Sciences laboratories because of the lack of funds. Consequently, professors back in Africa, even educated in developed countries end up doing no research over the years. However, the good news is Africa diaspora has many experienced Biomedical Scientists, who can give a helping hand to scientist back in Africa. To take advantage of these experienced Africa diaspora Scientists, world class research facilities must be built in Africa to attract them. African countries can address this Biomedical Sciences research issue through several ways. First, African countries must join hands and prioritize the African Union health projects. Second, African diaspora must be involved in health and research projects. Third, resources must be put together to improve and develop world class Biomedical research institute in the African continent.

This article is a wake-up call for Africa leaders and the Africa Union to invest in Biomedical Research. Investing in Biomedical research will help Africa to deal efficiently with future disease outbreaks. This Article formulates my own personal point of view or opinion about Ebola Outbreak and the level of Biomedical Research quality in Africa. For any question, discussion, or suggestion do not hesitate to contact me.

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EBOLA VIRUS DIESASE (EVD)

Key facts

- Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever, is a severe, often fatal illness in humans.
- EVD outbreaks have a case fatality rate of up to 90%.
- EVD outbreaks occur primarily in remote villages in Central and West Africa, near tropical rainforests.
- The virus is transmitted to people from wild animals and spreads in the human population through human-to-human transmission.
- Fruit bats of the Pteropodidae family are considered to be the natural host of the Ebola virus.
- Severely ill patients require intensive supportive care. No licensed specific treatment or vaccine is available for use in people or animals.

Ebola first appeared in 1976 in 2 simultaneous outbreaks, in Nzara, Sudan, and in Yambuku, Democratic Republic of Congo. The latter was in a village situated near the Ebola River, from which the disease takes its name.

Genus Ebolavirus is 1 of 3 members of the Filoviridae family (filovirus), along with genus Marburgvirus and genus Cuevavirus. Genus Ebolavirus comprises 5 distinct species:

1. Bundibugyo ebolavirus (BDBV)
2. Zaire ebolavirus (EBOV)
3. Reston ebolavirus (RESTV)
4. Sudan ebolavirus (SUDV)
5. Taï Forest ebolavirus (TAFV).

BDBV, EBOV, and SUDV have been associated with large EVD outbreaks in Africa, whereas RESTV and TAFV have not. The RESTV species, found in Philippines and the People's Republic of China, can infect humans, but no illness or death in humans from this species has been reported to date.

Transmission

Ebola is introduced into the human population through close contact with the blood, secretions, organs or other bodily fluids of infected animals. In Africa, infection has been documented through the handling of infected chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead or in the rainforest.

Ebola then spreads in the community through human-to-human transmission, with infection resulting from direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people, and indirect contact with environments contaminated with such fluids. Burial ceremonies in which mourners have direct contact with the body of the deceased person can also play a role in the transmission of Ebola. Men who have recovered from the disease can still transmit the virus through their semen for up to 7 weeks after recovery from illness.

Health-care workers have frequently been infected while treating patients with suspected or confirmed EVD. This has occurred through close contact with patients when infection control precautions are not strictly practiced.

Among workers in contact with monkeys or pigs infected with Reston ebolavirus, several infections have been documented in people who were clinically asymptomatic. Thus, RESTV appears less capable of causing disease in humans than other Ebola species. However, the only available evidence available comes from healthy adult males. It would be premature to extrapolate the health effects of the virus to all population groups, such as immuno-compromised persons, persons with underlying medical conditions, pregnant women and children. More studies of RESTV are needed before definitive conclusions can be drawn about the pathogenicity and virulence of this virus in humans.

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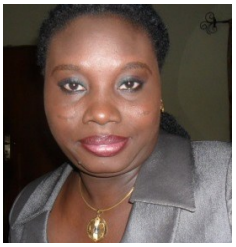
BEYOND RESOURCE SHARING: SUSTAINABLE MANAGEMENT OF TRANSBOUNDARY POLLUTION AND DISEASES



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The flora, fauna, microorganisms, aquatic and climatic systems, and other elements that constitute the environment, including human beings, are not restricted to geographical boundaries. More often than not, they cross the political boundaries between nations. When this happens, the issues of shared concern that arise from the communal space, resource, system, or migratory species are referred to as "transboundary". Globally, 263 international transboundary river basins have been identified, but beyond water resources, the spate of human movement has been linked to the increase in emerging and re-emerging transboundary diseases. Examples include West Nile virus in North America, Acquired immune deficiency syndrome (AIDS) and SARS globally. A recent one is Middle Eastern Respiratory syndrome (MERS), which is fast spreading; first diagnosed in Saudi Arabia in 2012, it has since spread to other Middle Eastern countries, Turkey, France, UK, Italy, Malaysia, and Tunisia. The first case of MERS was reported in the United States on May 2, 2014. It is therefore apparent that an infectious disease in one country is a hazard to all because an epidemic in one country can spread rapidly across national borders and become a regional or global concern.

According to WHO, (2014), the Ebola virus disease (EVD) has already killed over 600 people across West Africa. Between 18 and 20 July 2014, 45 new cases and 28 deaths were reported from Guinea, Liberia, and Sierra Leone. As of 20 July 2014, the cumulative number of cases attributed to EVD in the three countries stood at 1 093, including 660 deaths. The death of an infected Liberian plane passenger who introduced the deadly virus to Nigeria on the 20th of July 2014 marked a new and alarming cross-border development in a disease that has spiralled into the world's biggest epidemic. The Daily Mail, UK of July 28 2014 therefore opined that an outbreak of Ebola could spread worldwide by air travel.

Unfortunately, the management of transboundary resources and diseases is driven by national priorities and usually involves national strategic and operational plan for prevention, response and containment. Usually, inter-country and cross-border collaboration and effective coordination are non-existent because laws and regulations usually differ on either side of the divide and there are many institutional players with different agenda and mandates. For a shared resource or transboundary disease there is a need to adjust priorities to ensure not only equitable sharing when a resource is involved, but effective and sustainable prevention and management as well.

The dramatic emergence and spread of zoonotic diseases and widespread pollution and depletion, especially of water resources requires holistic, collaborative strategies to strengthen the collective capacity to meet these challenges. Integrated transboundary water resources and disease management, coordinated research and planning, strengthened lines of communication, adequate legal and institutional framework to address issues of mutual concern is hereby advocated.

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Signs and symptoms
EVD is a severe acute viral illness often characterized by the sudden onset of fever, intense weakness, muscle pain, headache and sore throat. This is followed by vomiting, diarrhoea, rash, impaired kidney and liver function, and in some cases, both internal and external bleeding. Laboratory findings include low white blood cell and platelet counts and elevated liver enzymes.

People are infectious as long as their blood and secretions contain the virus. Ebola virus was isolated from semen 61 days after onset of illness in a man who was infected in a laboratory.
The incubation period, that is, the time interval from infection with the virus to onset of symptoms, is 2 to 21 days.

Diagnosis
Other diseases that should be ruled out before a diagnosis of EVD can be made include: malaria, typhoid fever, shigellosis, cholera, leptospirosis, plague, rickettsiosis, relapsing fever, meningitis, hepatitis and other viral haemorrhagic fevers.
Ebola virus infections can be diagnosed definitively in a laboratory through several types of tests:

- antibody-capture enzyme-linked immunosorbent assay (ELISA)
- antigen detection tests
- serum neutralization test
- reverse transcriptase polymerase chain reaction (RT-PCR) assay
- electron microscopy
- virus isolation by cell culture.

Samples from patients are an extreme biohazard risk; testing should be conducted under maximum biological containment conditions.
Vaccine and treatment
No licensed vaccine for EVD is available. Several vaccines are being tested, but none are available for clinical use.
Severely ill patients require intensive supportive care. Patients are frequently dehydrated and require oral rehydration with solutions containing electrolytes or intravenous fluids.
No specific treatment is available. New drug therapies are being evaluated.

Natural host of Ebola virus
In Africa, fruit bats, particularly species of the genera *Hypsignathus monstrosus, Epomops franqueti* and *Myonycteris torquata*, are considered possible natural hosts for Ebola virus. As a result, the geographic distribution of Ebolaviruses may overlap with the range of the fruit bats.

Ebola virus in animals
Although non-human primates have been a source of infection for humans, they are not thought to be the reservoir but rather an accidental host like human beings. Since 1994, Ebola outbreaks from the EBOV and TAFV species have been observed in chimpanzees and gorillas.
RESTV has caused severe EVD outbreaks in macaque monkeys (Macaca fascicularis) farmed in Philippines and detected in monkeys imported into the USA in 1989, 1990 and 1996, and in monkeys imported to Italy from Philippines in 1992.

Since 2008, RESTV viruses have been detected during several outbreaks of a deadly disease in pigs in People's Republic of China and Philippines. Asymptomatic infection in pigs has been reported and experimental inoculations have shown that RESTV cannot cause disease in pigs.

Prevention and control
Controlling Reston ebolavirus in domestic animals
No animal vaccine against RESTV is available. Routine cleaning and disinfection of pig or monkey farms (with sodium hypochlorite or other detergents) should be effective in inactivating the virus.

If an outbreak is suspected, the premises should be quarantined immediately. Culling of infected animals, with close supervision of burial or incineration of carcasses, may be necessary to reduce the risk of animal-to-human transmission. Restricting or banning the movement of animals from infected farms to other areas can reduce the spread of the disease.

As RESTV outbreaks in pigs and monkeys have preceded human infections, the establishment of an active animal health surveillance system to detect new cases is essential in providing early warning for veterinary and human public health authorities.

Reducing the risk of Ebola infection in people
In the absence of effective treatment and a human vaccine, raising awareness of the risk factors for Ebola infection and the protective measures individuals can take is the only way to reduce human infection and death.
In Africa, during EVD outbreaks, educational public health messages for risk reduction should focus on several factors:

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Higher-Ends CLimate Impact EXtremes Change for Decision Support (HELIX) Northern Hemisphere Sub-Sahara Africa Regional Focus and Stakeholder Engagement.

High-end climate change in Africa

Sub-Sahara Africa is anticipated to be one of the areas where socio-economic welfare is vulnerable to the impacts of extreme climate change. With the global target of limiting global warming to 2oC becoming difficult to achieve through international negotiations, the High-End Climate Change Impacts and Extremes project (HELIX) is researching the consequences of planet Earth at 4oC and 6oC warming.

For Northern Hemisphere Sub-Sahara Africa (NSSA), information about extreme climate is now necessary information to guide policy decisions and adaption choices, pathways and implications. The HELIX project, funded by the EU under the 7th Framework Programme seeks to undertake its research across a range of physical, natural and social science disciplines in close engagement with users and stakeholders to ensure appropriate focus, clarity and utility of its knowledge. HELIX is producing a global picture of 4 and 6 degree worlds and then applying a regional focus to NSSA, South Asia and Europe.

HELIX NSSA focuses on West and East Africa, including the upper Nile Basin. In West Africa, HELIX tasks are being undertaken by Agence National De La Meteorologie Du Senegal (ANACIM), while in Eastern Africa, implementation is under IGAD Climate Prediction and Applications Centre (ICPAC), Kenya. ICPAC is the coordinator for both Eastern and Western Africa. In Northern Hemisphere Eastern Africa, climate adaptation strategies and choices include food security with livestock and water resources among other climate vulnerable socio-economic activities.

High-end climate research applied to African livelihoods

Regional Users and stakeholders are involved in providing guidance to HELIX so that its research is useful. For Eastern Africa, the stakeholders are policy makers and advisory bodies for food security including crop and livestock productivity, water resources and health among others.

HELIX's first East Africa Stakeholder Engagement Workshop was held in Addis Ababa, Ethiopia, 4 - 8 August 2014. The workshop was held together with C-DAPT, a food security and climate adaptation initiative under the World Food Program (WFP). The HELIX agenda was addressed on the final 2-days of the event. Events on 7th August 2014 consisted of key stakeholders making key note presentations on their extreme climate change information needs. Information needs for each sector and stakeholders in the form of technical report constitutes one of the NSSA deliverables for HELIX. The report is a work-in-progress at time of writing.

Both HELIX and the WF C-DAPT initiatives integrated well with the new IGAD strategy for Regional Resilience building towards minimization of adverse climatic impacts within Eastern and Greater Horn of Africa (GHA), called Drought Disaster Resilience and Sustainability Initiative (IDDRSI) Strategy. Some of the recommendations contained in a communiqué released at the end of the workshop included:

1. A need for a framework that requires an interactive process of all food security stakeholders and climate experts to closely link the climate information to agriculture, health, water and food security and produce a consensus of periodic outputs to better inform programme responses and policy. This framework workshop should be part of strengthening ongoing activities in the IGAD region such as GHACOF

2. Use of appropriate integrated tools and methodologies in a multi-stakeholder participatory approach for the analysis of data sets to meet food security information needs for adaptation to climate variability and change at regional and local scales.

3. Necessity for enhanced collaboration and partnerships between stakeholders globally and regionally, across member countries and amongst the various disciplines, in order to create synergies and tackle the challenges of climate change.

4. The need to provide regional policymakers and managers with a clear, coherent and internally-consistent future information on extreme climatic events as a means of Supporting regional and national scale adaptation, resilience program planning and policy formulation

5. Establishment of feedback mechanisms between providers and users of climate information including food security and other vulnerable sectors.

6. Need for annual events of stakeholders held to review the progress made and discuss the way forward.

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i. Reducing the risk of wildlife-to-human transmission from contact with infected fruit bats or monkeys/apes and the consumption of their raw meat. Animals should be handled with gloves and other appropriate protective clothing. Animal products (blood and meat) should be thoroughly cooked before consumption.
ii. Reducing the risk of human-to-human transmission in the community arising from direct or close contact with infected patients, particularly with their bodily fluids. Close physical contact with Ebola patients should be avoided. Gloves and appropriate personal protective equipment should be worn when taking care of ill patients at home. Regular hand washing is required after visiting patients in hospital, as well as after taking care of patients at home.
iii. Communities affected by Ebola should inform the population about the nature of the disease and about outbreak containment measures, including burial of the dead. People who have died from Ebola should be promptly and safely buried.

Pig farms in Africa can play a role in the amplification of infection because of the presence of fruit bats on these farms. Appropriate biosecurity measures should be in place to limit transmission. For RESTV, educational public health messages should focus on reducing the risk of pig-to-human transmission as a result of unsafe animal husbandry and slaughtering practices, and unsafe consumption of fresh blood, raw milk or animal tissue.

Gloves and other appropriate protective clothing should be worn when handling sick animals or their tissues and when slaughtering animals. In regions where RESTV has been reported in pigs, all animal products (blood, meat and milk) should be thoroughly cooked before eating.

Controlling infection in health-care settings
Human-to-human transmission of the Ebola virus is primarily associated with direct or indirect contact with blood and body fluids. Transmission to health-care workers has been reported when appropriate infection control measures have not been observed.

It is not always possible to identify patients with EBV early because initial symptoms may be non-specific. For this reason, it is important that health-care workers apply standard precautions consistently with all patients – regardless of their diagnosis – in all work practices at all times. These include basic hand hygiene, respiratory hygiene, the use of personal protective equipment (according to the risk of splashes or other contact with infected materials), safe injection practices and safe burial practices.

Health-care workers caring for patients with suspected or confirmed Ebola virus should apply, in addition to standard precautions, other infection control measures to avoid any exposure to the patient's blood and body fluids and direct unprotected contact with the possibly contaminated environment. When in close contact (within 1 metre) of patients with EBV, health-care workers should wear face protection (a face shield or a medical mask and goggles), a clean, non-sterile long-sleeved gown, and gloves (sterile gloves for some procedures).

Laboratory workers are also at risk. Samples taken from suspected human and animal Ebola cases for diagnosis should be handled by trained staff and processed in suitably equipped laboratories.

WHO response
WHO provides expertise and documentation to support disease investigation and control. Recommendations for infection control while providing care to patients with suspected or confirmed Ebola haemorrhagic fever are provided in: Interim infection control recommendations for care of patients with suspected or confirmed Filovirus (Ebola, Marburg) haemorrhagic fever, March 2008. This document is currently being updated.

WHO has created an aide–memoire on standard precautions in health care (currently being updated). Standard precautions are meant to reduce the risk of transmission of bloodborne and other pathogens. If universally applied, the precautions would help prevent most transmission through exposure to blood and body fluids.

Standard precautions are recommended in the care and treatment of all patients regardless of their perceived or confirmed infectious status. They include the basic level of infection control—hand hygiene, use of personal protective equipment to avoid direct contact with blood and body fluids, prevention of needle stick and injuries from other sharp instruments, and a set of environmental controls.

SOURCE: WHO - http://www.who.int/mediacentre/factsheets/fs103/en/

Women participation in Science and Technology in Africa

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INTRODUCTION

Science is the basis for engineering and technology; it has a very significant impact on man's view of the world and his role in it. Science, engineering and technology (SET) play a very vital role in development of any nation. Science is the key to the prosperity of any nation. It is virtually impossible to expect any significant economic and social development without serious research in sciences. Thus, development of SET must be the priority of any nation.

Okeke, (2004) noted that there is a very poor enrolment of women in the field of SET at both secondary and tertiary levels of education, particularly in Physics. Part of this poor enrolment she attributed to the fact that, in the past, science optimizes the male characteristics of competitiveness and aggressiveness among others. While the characteristics that are most worthily accepted for females in our society include; passivity, emotionality, intuition and receptivity. This contributed strongly to sciences, particularly Physics being regarded as a male, not a female domain. This aspect though, could be regarded as old ideology, still has a great influence in involvement of most African women in science and technology in most parts of Africa. This has a great impact on women in Africa choosing science as a career. Social conditions and other roles women are expected to play in our society constitute a big barrier to women involvement in SET. Results from various past research works have revealed that women in sciences particularly Physics and Mathematics are still very few. Women are yet to distinguish themselves in this area; this constitutes serious problems facing African women in full participation in SET. It is disheartening and disturbing enough, we need to seek for lasting solution to this. We have observed that when women are given equal opportunity and encouragement, could do better than their men counterparts.

For one to think of a woman scientist and a leader, the woman scientists need to exist. To promote their existence, we need to encourage our young girls to study sciences. Therefore, there is need to explore the following strategies in other to encourage them.

STRATEGIES FOR ENCOURAGING YOUNG GIRLS/WOMEN IN CHOOSING SCIENCE AS CAREER

Some of relevant strategies include;

Creating awareness: In our respective society, we could achieve this through television programs, showing women scientists of developed and those of developing countries who have succeeded in SET. The villagers could be reached; by employing gathering technique, in which they are meant to understand roles women could play in both developed and developing countries. Instilling in them, what their own girls can do, if well encouraged. organizing interesting programs in rural areas will definitely yield positive results. To do this successfully, one must not only demonstrate love for the subject, but should also be proud of it. We can only give what we have, not what we don't have. Key emphasises to be laid especially in a science gathering is letting the public be aware that science, particularly physics is not a man's domain as they envisage and that a woman can be a physicist/scientist, yet possess a female characteristics that is most enthusiastically praised and accepted in our society. This will be gradually assimilated by the society and the effect will be a positive one. And by and by the society at large will internalize the fact that woman is an individual in her own right and with her own peculiar qualities of mind, that she contributes tremendously to the development of a nation, through knowledge acquired in Physics/science.

Guidance and counseling for young girls as regards choosing their courses/subjects: This is a very important strategy in encouraging girls/women to read science as a course. A woman scientist; for example a woman Physicist, who loves her course should do the counseling. We must be achievers in the area, before the counseling will be effective. It becomes imperative that, these girls learn from us if only we impress them and attract their attention.

Employing female to teach science to girls as much as possible: This is a more powerful tool in getting girls/women to read science, because; 'seeing is believing'. The fact that a female is standing before the girls/women and impacting the right knowledge is most encouraging. They will now know that it is not only a man's subject.

Organising workshops, seminar, science film classes, science drama sections conferences exhibition etc: Implementation of the above will go a very long way improving the enrolment and participation of women in science. These will improve the attitude of teachers, sensitize students to appreciate the subject.

Empowerment of women in the society: Yvonne (1999) noted that maximum success in increasing the number of women in science and technology will be achieved only when new opportunities are identified. One of these new opportunities is the empowerment of women, which Oxaal and Baden (1997) termed a process which leads women to perceive themselves as capable of undertaking decisions and making choices about their lives, this requires sufficient levels of self confidence and assertiveness. One of the tools for women's empowerment is Information Communication Technology (ICT).

Awards, scholarships should be instituted in Africa for girls/women in science: Instituting these, will not only encourage women in science, but will sensitize and build them up. Consequently, more women would be highly encouraged to read science as a career. L'Oreal-UNESCO/ANSTI has already embarked on such institution. I am a Laureate and a benefactor of L'Oreal-UNESCO Award for 2013 FWIS for the physical science. These Awards are yielding tremendous fruits and more women are encouraged to read science. Institution of more of such awards for women in science will help in participation of women in SET, hence more women scientist leaders will emerge.

Policy makers should involve women scientists in drawing policies in science and technology in Africa: Women scientists should be involved in drawing policies on science and technology. Definitely, this when done, will motivate women scientists and draw them near to full involvement and participation in developing science and technology of the nation.

Women scientists as leaders: Woman scientist as a leader faces many challenges due to social structure traditionally dominated by men. In academics, publication is the key thing here. We must strive to publish in international accepted journals; this is the criteria for claiming academic supremacy over our male counterparts. This uplifts and exposes one's academic capabilities. Supervision of higher degree candidates is one of the tools that could empower women scientists.

WAY FORWARD

1. Young girls/women should be encouraged to read science
2. Women scientists should reframe their minds and stand to take up challenges facing them
3. They should always make significant contributions in their various sectors of operation
4. Women should not be isolated as tokens in male dominated departments
5. Women scientist leaders already established could endorse and legitimate women who seek or attain leadership roles and must possess qualities of good leaders.
6. We need to promote our own accomplishments, just as men do
7. Organizations and individuals should support women scientists and hence, support progress towards a social structure
8. Women in science should support each other and while in power try to institute a fellow women scientists who are qualified

CONCLUSION

In Africa, very few women are participating in development of science and technology compared with advanced countries where the ratio is almost one to one. It is therefore suggested that African women should be encouraged to be fully involved in this assignment. If most of these suggestions are implemented, then participation of women in development of science and technology in Africa will be a reality and not a concept.

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The Author:

Prof Francisca Nneka Okeke is a winner of the prestigious L'Oreal-UNESCO Award for women in Science for physical Sciences, 2013. She is a strong advocate Women in Science education. She was the first female Head of Department of Physics and Astronomy, 2003- 2006; first female Dean, Faculty of Physical Sciences, 2008- 2010; first female Professor in the Faculty of Science and Engineering of the UNN and the first Woman Professor of physics in the Eastern part of Nigeria. A Fellow of AAS.

New Global Alliance for Energy-Efficient Appliances and Equipment Launched

The United Nations Environment Programme (UNEP) on 23 September 2014 announced a new initiative to accelerate the transition to more efficient appliances and equipment to reduce global energy demand, mitigate climate change and improve access to energy.

A worldwide shift to energy-efficient appliances and equipment - including lighting, air conditioners, refrigerators, electric motors, ceiling fans and distribution transformers - would reduce global electricity consumption by more than 10 per cent, saving US$350 billion annually in electricity bills and reducing global CO2 emissions by 1.25 billion tonnes per year.

"The launch of the Efficient Appliances and Equipment Partnership is a step forward towards achieving a greener energy path at a global scale. The shift to energy efficiency has become an imperative in today's world where the demand for energy continues to grow. The current fossil fuel-heavy energy system challenges global climate change mitigation efforts," said UN Under-Secretary-General and UNEP Executive Director Achim Steiner.

"Fortunately, energy-efficient technologies, the know-how and policy frameworks required to reduce CO2 emission levels to a level consistent with the 2°C target are available and ready for deployment. This new partnership will help implement and accelerate this process," he concluded.

Partners to the Initiative include the United Nations Development Programme, the International Copper Association, CLASP and the Natural Resources Defense Council. It is a public-private partnership that brings together intergovernmental and non-governmental organizations, appliance and equipment manufacturers, utilities, international development banks and financial institutions, to provide tailored assistance to governments for the development and implementation of national and regional strategies that facilitate the permanent transition to energy-efficient products.

As in most developing countries and emerging economies, the demand for energy-consuming products is increasing rapidly in Latin America and the Caribbean due to the fast growing urban population. In Paraguay, the stock of domestic refrigerators will double by 2030. In Panama, the stock of air conditioners is expected to increase by 400 per cent over the same period. The trend in the region towards increasing electricity consumption and consequently, greenhouse gas (GHG) emissions, significantly impacts global efforts to combat climate change.

The Global Efficient Appliances and Equipment Partnership released a report this week that assesses the economic and climate impact of cooling appliances in the Latin American and Caribbean region. According to the study, if all Latin American and Caribbean countries were to adopt and implement energy efficiency standards for refrigerators, air conditioners and ceiling fans, that feature the best available technology, 140 terrawatt hours of energy could be saved annually. This represents about 11 per cent of the region's current electricity consumption. GHG emissions could be reduced by 44 million tonnes, which is equivalent to taking 24 million passenger cars off the road.

The Dominican Republic is the first country in Latin America and the Caribbean to join the Global Efficient Appliances and Equipment Partnership Programme. Governments from another 15 countries in the region expressed their interest to join.

"The Dominican Republic is proud to be one of the first countries to join the global alliance. With a savings potential of more than 1.3 terawatt-hours per year, equivalent to over US$180 million, we realize the significant benefits to be gained by this partnership," said Juan Rodríguez Nina, Executive Director of the National Energy Commission, Dominican Republic
"Nicaragua wants to reduce electricity bills and, consequently, the high cost to the national budget of subsidized energy. Leapfrogging to high efficiency refrigerators and other appliances will allow us to achieve this goal and reduce carbon emissions derived from oil combustion," said Emilio Rapaccioli, Minister of Energy and Mines, Nicaragua.

The new global alliance supports the energy efficiency goal of the UN Secretary-General's Sustainable Energy for All (SE4LL) initiative. According to Fernando Cesar Ferreira, Executive Secretary of the Latin American Energy Organization, OLADE, "It is critical that international agencies join forces around the UN Secretary-General's Sustainable Energy for All initiative."
This new global partnership builds on UNEP's successful en.lighten initiative, a public-private partnership that counts ten countries in Latin America and the Caribbean, and 65 countries globally, as partners committed to phasing out inefficient incandescent lamps by the end of 2016.

KEY FACTS:

- Over 1.2 billion people around the world do not have access to electricity
- From 1990 to 2010, improvements in energy efficiency have reduced cumulative global energy demand by over 25 per cent
- A switch to energy-efficient appliances and equipment in just the top six product sectors has the potential to reduce global electricity use by over 2,500 terrawatt-hours, more than 10 per cent of global usage
- The Efficient Appliances and Equipment Programme has estimated electricity savings equivalent to 600 large power plants and over US$500 billion worth of investments in power generation

Source: Climate summit 2014: http://www.un.org/climatechange

No 'Plan B' for climate action as there is no 'Planet B' — Ban Ki-Moon

Secretary-General Ban Ki-moon today told what is thought to be the largest ever march in the United States demanding measures to halt the advance of global climate change, that there is no "Plan B" for action as there is no "Planet B."

Speaking to journalists after walking with an estimated 300,000 demonstrators on the People's Climate March through New York City on Sunday he said the world needs to "galvanize our action" and harness the people's "power to change."

As the clock ticks down to the Secretary-General's much-anticipated Climate Summit at UN Headquarters two days from now, politicians, celebrities, activists and the general public marched though the city to highlight global concerns about a lack of international action to stop the deleterious effects of climate change.

The People's Climate March is part of a worldwide campaign to persuade global leaders to act decisively on the issue. Marchers created a noisy carnival atmosphere as they filed through Manhattan's West Side. Many were dressed in costumes associated with indigenous groups others wore protest T-shirts. One banner in the shape of a road sign warned "Climate Crisis Ahead". Many chanted slogans, others played music.

Twelve-year old Marija Borozan from New York City was on her first ever protest march. "The world matters" she said, "I want to save the environment," she told a reporter from UN Radio.

Similar climate events were reported in 2,000 locations around the world.

Ricken Patel, the Executive Director of the march organizers Avaaz, said it was crucial for people to get out onto the streets. "It's important because there's a huge gap between the action our survival requires…and the action our Government are willing to take," on climate change, he said. "The street is where we close that gap."

The People's Climate March is campaigning, amongst other issues for curbs on harmful carbon emissions which contribute to global warming. "We are rushing headlong into catastrophic tipping points in our climate system," said Mr Patel. "We need action fast to transition to a 100 per cent clean energy economy."

The UN chief joined the march with the New York City mayor, Bill de Blasio as well as the French sustainable development minister, Ségolène Royal. Mr. Ban"s Climate Summit on Tuesday, 23 September, is expected to draw more than 120 heads of State and Government to galvanize action on climate change.

He said he hoped what people were saying at the march will be "truly reflected to the leaders" when they meet two days from now. "Climate change is a defining issue of our time," he added. "There is no time to lose. If we do not take action now we will have to pay much more."
It is expected that Governments will come to the Summit with concrete initiatives and that it will provide significant momentum for a global agreement on tackling climate change.

It is hoped a deal will be reached in Paris, France next year.

Source: Climate summit 2014: http://www.un.org/climatechange

AAS Fellow Prof Daya Reddy elected as next President of ICSU

Representatives from International Council for Science (ICSU) 120 National Members and 31 Scientific Unions attending the 31st General Assembly in New Zealand, has elected Prof Daya Batmanathan Reddy as the future President of the ICSU. Prof Reddy will take over from the current ICSU President, Gordon McBean, in October 2017.

Prof Daya Reddy, an eminent and respected scholar and scientist, is a Fellow of the African Academy of Sciences. He was elected Fellow of AAS in 2006 in the field of Mathematics. He is the President of the Academy of Science of South Africa (ASSAf), Co-Chair of the InterAcademy Council, and also Fellow of The World Academy of Sciences (TWAS).

Prof Reddy was born in Port Elizabeth, South Africa. He obtained his PhD degree in civil engineering from the University of Cape Town, and a PhD degree from Cambridge University. He was appointed professor of applied mathematics at the University of Cape Town in 1989, and served as dean of its science faculty from 1999 – 2005.

He currently holds the South African Research Chair in Computational Mechanics. He is President of the Academy of Science of South Africa, and serves as Co-Chair of the InterAcademy Council, a body which produces reports on scientific, technological and health issues for governments and global organizations. He is an elected fellow of TWAS and the African Academy of Sciences. He is a recipient of the Order of Mapungubwe (Bronze), awarded by the President of South Africa for distinguished contributions to science, and of the Georg Forster Research Award from the Alexander von Humboldt Foundation in Germany.

Daya Reddy's research interests lie at the intersection of applied mathematics and engineering sciences. Much of his work is concerned with analysis and computational simulation in solid and fluid mechanics, and concerns the development of mathematical models of material behaviour, analysis of these models, and the construction and implementation of algorithms for their numerical solution. His work is motivated by applications in areas such as materials science and biomechanics.

After his election, Prof Reddy thanked ICSU and the golabal science community for the honour done him and the confidence reposed in him. Reddy said that "ICSU is in a special position to promote the values of science and to provide leadership in seeking scientific approaches to the world's problems." He said he was particularly keen to ensure that ICSU becomes as inclusive as possible so that as the voice of science as it is, it will be able to involve the entire community worldwide."

2014 Edition of AU Kwame Nkrumah Scientific Awards

The African Union Kwame Nkrumah Scientific Awards, formerly known as the African Union Scientific Award Program, aims to honor top African scientists for their scientific achievements, valuable discoveries and findings. It is an opportunity to honor the memory of the great Pan-Africanist and first President of the Republic of Ghana, Dr Kwame Nkrumah.

Established in September 2008, this program is part of the African Union Commission's commitment to ensure science and technology contributes to the sustainable development efforts of the African Union. The Human Resource Science and Technology Department of the Commission, implements the program.

Find the "the rules of procedures and application form of the 2014 edition of the African Union Kwame Nkrumah Scientific Awards Programme" at the link below:
http://hrst.au.int/en/content/2014-edition-african-union-kwame-nkrumah-scientific-awards

Prof McBean is new President of ICSU

Prof. Gordon McBean during his inaugural address.
Photo: Brendon O'Hagan/ICSU

Professor Gordon McBean, an internationally recognized meteorologist and climate change expert, assumed office as the new President of the International Council for Science (ICSU) on 3 September 2014.

At the end of ICUS's 31st General Assembly in Auckland, New Zealand, Prof McBean assumed the presidency, to which he had been elected by representatives from ICSU's 120 National Members and 31 International Scientific Union Members at the previous General Assembly in Rome, Italy in 2011. An established member of the ICSU community, McBean succeeds the previous ICSU President, Yuan Tseh Lee, and is the second Canadian to take up this office.

Professor McBean was born and educated in Canada, and obtained a PhD in physics from the University of British Colombia (UBC), Vancouver. After an academic and research career that included serving as Professor of Atmospheric and Oceanographic Sciences at UBC, he was appointed Assistant Deputy Minister in Environment Canada, and was, from 1994 to 2000, responsible for climate, weather and air quality sciences and services in the federal government. He currently holds professorships in the Departments of Geography, Political Science and Physics at the University of Western Ontario, London, Canada, and is Director of Policy Studies at the Institute for Catastrophic Loss Reduction and Co-Director of the Centre for Environment and Sustainability there.

Farouk El-Baz on Green Revolution for Egypt

AAS Fellow Farouk El-Baz, in an interview with Benjamin Plackett of Al-Fanar Media has stated "I'm looking to improve food production in a big way, a sort of green revolution for Egypt". According to El-Baz, Egyptians should be able to feed themselves, and that is something he is committed to. He says using space technology and geology, it is possible to find and suggest alternatives to Egypt's only seven percent of cultivable land which is also where everyone lives.

"I look at satellite images and figure out how the land used to look in the past, when there was rainfall in the region". According to El-Baz, there is no need for canals in order to grow more food in Egypt because there are pockets of ground water in the desert. He added that Africa is moving northwards, at one point it was on the equator where it got a lot of rain and that ancient rain accumulated in places. Satellite images and radar images can penetrate through the land and give a picture of the hard surface beneath the sand that shows the old river channels, which lead to ancient deltas—underground lakes.

Since 1986, Farouk El-Baz has led Boston University's Center for Remote Sensing, recognized as a NASA center of excellence. Read the full interview at: http://www.al-fanarmedia.org/2014/09/conversation-farouk-el-baz-finding-water-desert/. SOURCE: Al-Fanar Media

ICMIS 2015

4th International Conference on Mathematics & Information Science

5-7 Feb. 2015, Zewail City of Science and Technology, Cairo, Egypt

The African Academy of Sciences

مدينة زويل للعلوم والتكنولوجيا
Zewail City of Science and Technology

Zewail City of Science and Technology is pleased to invite you to participate in the 4th International Conference on Mathematics & Information Science (ICMIS 2015) which will be held in Zewail City of Science and Technology, 5-7 Feb. 2015. It will feature advances in Mathematical Science, Business, Information Systems Engineering and Technology presented by international researchers. Some Grants for Young and Early Stage Researchers are available.
Submit abstracts at http://icmis5.naturalspublishing.com/Submission.asp not later than 15 Dec. 2014.
For more information, visit the conference website: http://icmis5.naturalspublishing.com/index.asp

TWAS Young Affiliates from Sub-Saharan Africa Region, 2014 - 2018

The World Academy of Sciences Regional Office for Sub-Saharan Africa (TWAS-ROSSA) is has announced the TWAS Young Affiliates for the year 2014. The selection follows overwhelming response to a call made earlier in the year on the same.

Each year since 2007, the five TWAS Regional Offices each select up to five scientists under the age of 40 to be Young Affiliates. This is part of TWAS' effort to recognize promising young researchers and increase the presence of younger scientists in the Academy. The appointment runs for a period of five years.

Sophie von der Heyden

Evolutionary Genomics Group, Stellenbosch University, South Africa is a leading marine biologist. Her primary research focus is on the conservation and sustainable utilisation of marine species and the marine environment. She is particularly interested in the applicability of molecular tools and statistical phylogeography/ phylogeny to help inform marine biodiversity planning, understanding Marine Protected Area connectivity patterns, and patterns of genetic structuring and speciation in southern Africa. She has experience with commercially exploited species such as rock lobster, molluscs, game fishes and southern African hake. Her research on hake resulted in the identification of separate commercial fishing stocks between South Africa and Namibia and the majority of her recent research also has implications for the design and placement of Marine Protected Areas. The latter is mainly derived from research aimed at identifying factors (oceanic currents, temperature, species life history etc.) that have shaped marine biodiversity.

Atunga Nyachieo

Institute of Primate Research (IPR), Kenya specializes in Reproductive Health and Biology particularly research on pathogenesis of reproductive tract infections and disorders as well as therapeutic interventions. His research career is coins around maternal and child health. He has focused on molecular and cellular aspects of reproductive biology (especially characterization of animal models for studying the pathogenesis of reproductive diseases and evaluation of medical interventions for reproductive disorders/infertility using assisted reproductive technology). In addition, he has been involved in child mortality associated diarrhoeal diseases-molecular characterization and epidemiology of enteric viruses (rotaviruses, adenoviruses, astroviruses).

Adewale Adewuyi

Redeemer's University, Nigeria, is an Industrial Chemist. His research activities have been on the industrial applications of underutilized seeds and seed oils in Nigeria which cuts across synthesis of surfactants, biofuel and major oleochemicals and their use in waste water treatment, environment, and food. Among his research activities include among others: attempts to find replacements or alternatives for known expensive conventional foods which are not easily accessed or afforded by low-income earners; he has sought to tackle waste water treatment by developing biomass adsorbents from lesser known underutilized seeds. He and his group have succeeded in synthesising Novel Difunctional Biomass Adsorbent which will quickly identify and remove pollutants from waste water. The essence is to remove both inorganic and organic pollutants from waste water via biosorption.

Chabi Adéyèmi M. S. Djagoun

University of Abomey Calavi, Benin is an expert in Wildlife Ecology and Conservation. As a local expert on small mammals, he contributed to the IUCN red list project for Benin; specifically he was responsible for the small carnivore assessment in 2008. He has been recently associated to the wildlife census of the W National Park study in 2013, which included experimental design, data collection and data analysis. He is also officeholder at IUFRO (International Union for Forest Research Organization), unpaid position, where he acts as coordinator of African Wildlife Conservation and Management Unit.

Adejuwon Adewale Adeneye

State University College of Medicine, Nigeria is a Pharmacologist specializing in Therapeutics and Toxicology. In the last 9 years, he has been actively involved in the identification and pharmacological screening and evaluation of the therapeutic benefits inherent in the local medicinal plants used by Yoruba traditional healers in the local management of diabetes mellitus, obesity, hyperlipidemia and other endocrine disorders. In addition, efforts have been channeled towards investigating the anti-hyperglycemic mechanisms and standardizing the appropriate and effective dosages of these medicinal plants, particularly, flora that are of Southwest Nigeria origin. He is also involved in drug discovery and development from some of these plants. One of particular interest is the recent discovery of a new antihyperglycemic compound named erinidine, a bisindole alkaloid isolated from the aqueous seed extract of Hunteria umbellata (K. Schum.) Hallier f. (family: Apocynaeceae).

ELIGIBILITY

To be eligible for selection, researchers must:

- be aged 40 or less on 1 January of the year in which they are selected;
- have been living and working in a developing country for at least the preceding three years;
- have an excellent have an excellent track record of at least 10 international publications in peer-reviewed journals.

CLIMATE CHANGE ADVOCACY: Sport and Social Media
A perfect marriage in an imperfect world

By Leszek J. Sibilski

From the melting snow of the Sochi 2014 Winter Olympics to the stifling heat of the Australian Open Tennis Championships in Melbourne, where plastic water bottles melted and players suffered heat exhaustion, climate change has once again proved itself relentless and unforgiving. So are we going to sit back and let it ravage our lives? Or affect our love of sport? As a former member of the Polish National Olympic Team in cycling, I definitely hope not. Let's unite the power of sport with the might of social media to create an alliance that will face up to the world's environmental enemy number one.

Fact – the world is getting warmer

According to the World Bank's 'Turn Down the Heat' reports, the planet could warm from its current global mean temperature of 0.8°C above pre-industrial levels to as high as 4°C by 2100, even if countries fulfill current emission-reduction pledges. This means more extreme heat waves, sending health, socio-political and economic ramifications across the globe. The President of The World Bank, Jim Yong Kim, is already calling for action to hold warming below 2° C. The question is, what can we do?

Turn to sport; it's a big deal

Sport is not the most obvious choice for addressing climate change. But, whichever way you look at it, sport is huge. It captivates billions and employs millions. Some estimates say it's worth 600-700 billion euros per year, making it one of the world's biggest industries. And best of all, sport is for all. Sport brings people together from all walks of life and all corners of the globe to play and compete, or just spectate.

Sport organizations, players and spectators all need to embrace the sustainability challenge faced by sport as a result of climate change. As early as the 1890's, the founder of the Modern Olympic Games, Pierre de Coubertin, viewed sport as a way of developing a harmonious relationship between mankind and nature to promote a peaceful society. He once said that sport was "part of every man and woman's heritage and its absence can never be compensated for." In 1994, the Centennial Olympic Congress, Congress of Unity, recognised the importance of the environment and sustainable development. It included a paragraph in the Olympic Charter acknowledging its responsibility and classifying the environment as the third dimension of Olympism, alongside sport and culture. An IOC Sport and Environment Commission was created in 1995 and meets once a year, advising the IOC Executive Board on policies that ensure environmental protection and support for sustainable development.

Sport can shape the way people think about the environment. Because it's so popular in every continent on Earth, sport has a vital role to play in delivering a powerful eco message. It keeps humans healthy and can also keep the planet healthy too. To paraphrase the motto of the YMCA, sport can regenerate the *body, mind, spirit and nature* – enhancing the individual and the land in which he or she lives.

Many believe sport holds the potential to be the most influential element in the environmental movement. More influential than politics. More influential than business. Sport has the capacity to transform the way people view the planet and be a driver for environmental change.

Bring on the superstars

The universal power of sport is not only its popularity but also the celebrity status of its stars. High profile professional athletes make great ambassadors and role models. That's why we want them to step up and make a stand against climate change. They can talk about the effects of climate change; create a debate, inspire people to change their lifestyles to prevent further damage to the environment. And most of all, by helping educate our greatest resource, young people, the inheritors of Earth.

But even the most well-meaning actions of the most famous sporting stars may not be enough to reverse the trend of climate change. Which is why we need to call on an amazing new phenomenon – social media.

Harnessing the might of social media

As a father of two young athletes, I want the global sport community to understand and talk about the consequences of climate change. And one way of doing that is through social media.

Millions, billions, trillions

The metrics of social media usage are mindboggling. Take the 2014 FIFA World Cup BrazilTM, the biggest single social media-sporting event ever. An astounding 350 million Facebook users worldwide made 3 billion posts, comments, and likes during the tournament. There were over 600,000 tweets per minute on Twitter during some parts of the final. And over 32 million tweets during the telecast of the match.

Rewind... London 2012

The incredible social media explosion in Brazil had its roots two years earlier at the Olympic Games. Back then, the International Olympic Committee billed London 2012 as the 'first social media Olympic Games' but fell short by limiting genuine interaction with the athletes and restricting their messages. Still, it was an impressive debut for social media. For the first time, digital coverage exceeded traditional broadcast coverage with sites such as Facebook, Twitter, and Google+ attracting 4.7 million followers. There were 150 million tweets about the Games, more than 960,000 mentions on Twitter about Jamaican sprinter Usain Bolt and over 830,000 for American swimmer Michael Phelps. Superstars get people talking.

Not just a plaything for the young

Don't think social media is just for the youth either. The fastest growing age group on social media are people over 65. The percentage of individuals over 65 who say they use social media has more than tripled from just 13% in 2009 to 43% in 2013. Furthermore, 60% of baby boomers in the 50 to 64 age group are using social networks to communicate. These people are avid sports fans with the time, flexibility and money to enjoy sports and latest gadgets.

The world's fastest growing opportunity

One billion Facebook users in 2014, 255 million Twitter users every month. The pull of social media is growing by the day. There simply is no better way to talk about global climate change, inspire people to change their thinking and generate action!

Take that new phenomenon, the 'selfie'. Everyone is taking them, from President Obama to tennis star Serena Williams and astronaut Akihiko Hoshide. Selfie was the Oxford English Dictionary word of the year in 2013 and thanks to it, as many as one trillion photos will be taken this year. Apps like Snapchat and Instagram that encourage people to take photos are boosting the popularity of the selfie, making it a vital weapon in the fight against climate change.

A marriage made in heaven

So, it's clear. Sport is for all, and social media is for all. They're natural partners, ready to work together in perfect synergy. The future of sport is linked to how we interact with keyboards, touchscreens and remote controls. Did you know almost half of all tweets are about sport? No surprise then that Twitter recently unveiled its first official partnership with a sports franchise, NASCAR, sending strong signals of what lies ahead for the global sporting community.

How sport and social media are getting it together

On March 23rd 2013, world famous footballer, Lionel Messi, with 43 million fans on Facebook, challenged his followers to join Earth Hour by turning off all lights. They responded.

On November 21, 2013, major professional US sports league executives and the US Olympic Committee, testified before Congress for the first time about the consequences of climate change within the sports community. And in February 2014, as a result of Sochi's melting aftermath, 105 Winter Olympians lobbied for climate change awareness by signing a petition urging world leaders to address climate change on a global scale. The posts and tweets around this initiative tell the story – *welcome aboard, what took you so long!*

On March 4, 2014, football ambassadors Ronaldo and Zinedine Zidane, together with friends and backed by UEFA and UNDP, staged a football match at the Stade de Swisse in Berne. The proceeds from this match, the 11th Annual Match Against Poverty, went to support recovery efforts in the Philippines in the wake of Typhoon Haiyan, one of the most powerful storms on record. Social media helped make it a resounding success.

By July 2014, Architecture for Humanity, together with FIFA and Streetfootballworld, had built 19 community centers including football pitches in 15 African countries. The goal – to use soccer as a means for social change, with social media supporting the initiative.

The key word is CONNECT

Social media is all about connecting. Sport is all about connecting. We at Connect4Climate are all about connecting. Although it is true that sports organizations have not yet managed to harness the power of social media in the same way that they have harnessed the power of TV, the future looks brighter if we can get social media and sport working hand-in-hand to face up to climate change. Let's use our experience of TV as a blueprint for social media – the opportunities for sport are immense.

Soaring access to mobile devices across the globe, the explosion of tweets and posts, an obsession with selfies – these trends are empowering the world to actively participate and contribute in real time while watching sport. We have tremendous potential to create countless platforms to connect against climate change and a whole host of other contemporary social problems around the world.

The key challenge is to EVOLVE

Climate change is relentless. The world's resources are limited. We need to find new ways to fuel our lives. In this environment, the need to evolve is essential. Sport is for all and offers a powerful platform that can influence the future for generations to come. And in social media, we have digital and networking opportunities that can really make a difference. Educating the sports community to maximize the potential of social media is critical. By uniting the two, we can provide the force we need to secure the ultimate prize – the health of Planet Earth for our children, their children and all future generations.

THE AUTHOR:

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Driving Scientific and Technological Innovation in Africa

OPPORTUNITY

CIPHER grants for HIV-related research

The International AIDS Society is offering research funding of up to $75,000 USD for two years in their Collaborative Initiative for Paediatric HIV Education and Research (CIPHER) Grant Program. They seek research projects that contribute to the optimization of diagnosis, prevention, treatment and care of infants, children and adolescents affected by HIV in resource-limited settings. It is targeted at early-stage investigators - from inside and outside the field of HIV research - to address critical research questions related to the long-term impact of HIV infection and treatment on growing children, as well as to examine the impact of HIV or antiretroviral perinatal exposure in uninfected children. Preference is given to researchers in LMIC countries.

CIPHER grantees attend the biennial IAS and international AIDS conferences, with travel and accommodation covered through the program. The call for letters of intent will open on 1 October 2014. More information, http://www.iasociety.org/Default.aspx?pageId=730&utm_source=August+2014+LMIC+opportunities&utm_campaign=8%2F7+LMIC&utm_medium=email. Deadline: 31 October 2014.

Kirklin Trust Grants for Legume Research

The Kirklin Trust has established two main legume research consortia which it funds: the first in West African countries, focuses on cowpea, and the second, in East Africa countries, on common bean. The Trust's aim in these programs is to bring the power of modern genetic methods, such as marker-assisted breeding techniques, to the improvement of crops. The projects are always built around an existing experienced legume breeder, located either in a National Agricultural Research Institute or a University. With few exceptions, research projects supported by Kirkhouse Trust are located in countries where local support of science is under funded.The Trust is willing to engage with scientists whose interests fit within the Trust's two main consortia. However, the Trust prefers enquirers to make an initial informal approach to check if a project is likely to be successful, rather than submitting a formal application.

Deadline: rolling. For more information: http://www.kirkhousetrust.org/researchg.html#.U-OEeuNdUnY?utm_source=August+2014+LMIC+opportunities&utm_campaign=8%2F7+LMIC&utm_medium=email

MRC/DFID African Research Leader scheme 2014/15

The UK Medical Research Council and the UK Department for International Development announce a further call for proposals for the prestigious African Research Leader awards. The MRC/ DFID jointly funded scheme aims to strengthen research leadership across sub-Saharan Africa (SSA) by attracting and retaining exceptionally talented individuals who will lead high quality programmes of research on key global health issues pertinent to SSA. The African Research Leader (ARL) should be supported by an enthusiastic local research environment and by a strong linkage with a UK partner. Closing date: 27/11/2014.

All administrative and scientific enquiries should be directed to Samia Majid, ARLadmin@headoffice.mrc.ac.uk. Enquiries relating to the completion of the electronic application should be directed to the Je-S helpdesk:, JeSHelp@rcuk.ac.uk.

Share with AAS

The speech your delivered, the presentation you made or making right now at that workshop, symposia, for a, conference, workshop, or event should not end there! You can reach more stakeholders than those at that event! Reaching more people with your knowledge could lead to a national science/technology/innovation policy change.

Those thoughts or ideas you shared (in whatever format--powerpoint/word etc) could be the turning point for a government that has been importing expensive technology to now look at home-grown solutions. Probably the decision maker did not know about what you just shared. Enlighten someone by your presentation and we may be on our way to using local expertise (you) and technology (your innovation or idea).

Your knowledge must be shared! And it must be shared widely. Let the policy formulators, scientists and researchers, innovators, implementers and end-users know what you are doing. You may be sharing what you are doing in a number of ways already. The African Academy of Sciences will like to help push your sharing to another level.

The AAS has revamped its Communications unit Secretariat to enable it reach more people with the work scientists all over Africa and the world are doing. The Academy has put in place mechanisms to continue strengthening its engagement with the scientific community, governments and policy makers and the wider community to ensure that no matter where your work is done or your findings presented, your knowledge, your thoughts, your ideas and your and work must reach its intended stakeholders.

There is one simple step you need to take. Email your activities, photos, videos, papers, briefs, PowerPoint presentations, etc to the AAS secretariat. The Communication team will breakdown the science to mass consumable level, consult you with the product derived from your presentation and when satisfied with the communication material, the Communication Team will use all available channels to widely disseminate your product to all the needed stakeholders.

Persistence in sharing out your thoughts, ideas, lectures, and presentation will definitely see heightened reshaping of or influencing policy formulations not only at our various national governments, regional entities (ECOWAS, EAC, SADC, etc) but also at the continental level.
Africa's desired future, "driven by science, technology and innovation" starts with you! Don't close your presentation and lock it in your laptop. Share with AAS.

Send to communication@aasciences.org

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