



Science * Policy * Africa

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Science * Policy * Africa

Is a quarterly newsletter of the African Academy of Sciences. The Newsletter carries information on science and policy issues on the African continent and beyond. It seeks to deepen the science-policy discourse on the African continent. The Newsletter also provides information on activities of the AAS to the global science and policy community.

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Science for Africa's Development



Dr Kwame Nkrumah, First President of Ghana

In Dr Kwame Nkrumah's speech in Addis Ababa, Ethiopia, on 24th May 1963, titled, "THE PEOPLE OF AFRICA ARE CRYING FOR UNITY", he made very profound statements that are as relevant today as they were over 50 years ago. This visionary speech was delivered at a the meeting of the O.A.U.

Let me concentrate on just one aspect of the many visionary, or even prophetic, statements of the speech. Dr Nkrumah said: "We shall accumulate machinery and establish steel works, iron foundries and factories; we shall link the various states of our Continent with communications; we shall astound the world with our hydroelectric power; we shall drain marshes and swamps, clear infested areas, feed the undernourished, and rid our people of parasites and disease. It is within the possibility of science and technology to make even the Sahara bloom into a vast field with verdant vegetation for agricultural and industrial developments". This, in my opinion, was the laying-out of a blue-print for Africa's future.

It is not very encouraging to go over how far Africa has come in trying to do the things that Kwame Nkrumah said on 24th May 1963. It is not worth crying over how bad we have performed. Let us remind ourselves that "it is still within the possibility of science and technology to make even the Sahara bloom into a vast field with verdant vegetation for agricultural and industrial developments".

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The African Academy of Sciences

9th AAS General Assembly Brazzaville, Congo 14 - 16 April 2014







Read about the 9th AAS General Assembly to take place from 14-16 April 2014 in Brazzaville, Congo, on Page 4

In 2007, UNESCO's General Conference approved the launch of an African Science, Technology and Innovation Policy Initiative (ASTIPI) which aimed at developing national science, technology and innovation (STI) policies for all those African countries still without one, as part of UNESCO's contribution to the African Union's Science and Technology Consolidated Plan of Action (CPA). The African Science, Technology and Innovation Indicators (ASTII) programme was also launched in 2007 by the New Partnership for Africa's Development (NEPAD) as one of the programme areas of the CPA.

Actually, Africa's journey on science-policy discourse did not start in 2007. Even a casual walk through the path that Africa had walked in science-technology-policy discourse would reveal that it has been dominated by rhetorical commitment to anything we have said or signed concerning the importance of science and technology for our development. There is so much evidence around the world to support any decision made to invest heavily in science and technology and innovation as a sure means to developing our individual countries and continent in general. Ghana and South Korea who had similar GDP at independence are a classical case of how science, technology and innovation can help transform a country

The difference between countries that have utilized STI for development seem to lie in the presence of evidence-informed policy on STI and commitment in implementing the policy. This is where Africa may be getting it wrong. There is an inadequacy of research holistically examining the science-policy interface in Africa and that suggests practical strategies and recommendations for strengthening linkages between scientific knowledge and the policy process. Is the "science" being left to "scientists" and the "policy-making" being left to "policy makers"? Is this not really the case? How has this kind of arrangement benefitted or not benefitted the continent?

There are many hard questions that African researchers and leaders who have been championing STI for development need to answer objectively as a way of getting it right for a STI-lead development of the continent. These questions include: how is the relationship (s) between scientific researchers and decision-makers in developing programmes and policies to drive an STI-lead growth?; how many of the research done on the continent finds its way to influence policies and programmes on the continent?; what are the challenges and opportunities for strengthening relationship between research and policy?; what types of strategies exist or could potentially be adopted to improve evidence-informed policy processes?

AAS in re-inventing itself to be more relevant in driving scientific and technological innovation in Africa, has resolved to lead the quality of policy dialogues on science and technology. One manifestation is the rebranding of our newsletter to **SCIENCE*POLICY*AFRICA** as a tool to deepen the science-policy discourse in Africa.

Message from the President

Last year, the AAS Governing Council approved a name change for our quarterly newsletter to reflect the content and message it carries. This is the first issue of our newsletter to come out in 2014 under the new name "**SCIENCE * POLICY * AFRICA**".



I use this opportunity to remind our dear Fellows, the science, technology and innovation community as well as our general readership that this year, 2014, is a very important one for the AAS. The AAS Governing Council elected in February 2011 is completing their three year term this year. On behalf of the members of the team and on my own behalf, I want to thank all the AAS Fellows for giving us the opportunity to serve the Academy. We did it with commitment, the best way we could. Myself, I did it in line with my two predecessors, the late Prof. Thomas R. Odhiambo, from Kenya and Prof. Mohamed H. A. Hassan from Sudan. The two served the Academy with dedication and laid the foundation for us. Our task, therefore, was to build on their legacy, and also to reposition the Academy to make greater impact.

Looking at the situation of the Academy when we were elected and what we achieved these 3 years, we can be proud of what we have done. But a lot remains to be done. Our first challenge was to mobilize all the fellows to get them more involved in the activities of the Academy, especially by using the facilities offered by the ICT. I thank you our Fellows for your cooperation and ask you to react more quickly and it will be perfect!

The Management Committee (MC) of AAS utilized technology, as we had advocated, and managed to meet regularly although members of the MC are not within one country. The Governing council (GC) of AAS also held its meetings twice a year, as indicated in the constitution. We are working towards the 9th General Assembly (GA) of AAS and we hope that the GA will be organized on time and a new team put in place.

I would like to remind Fellows of some major highlights in the last three years such as, the amendment of our Constitution in 2012 which for the first time has created an Affiliate Membership programme to formalize the academy's working with young scientists; the finalization of the Strategic plan 2013— 2018; the revamping of AAS membership recruitment process which now ensures nominations are submitted, processed and new Fellows elected within one calendar year. Another very important achievement is the measures taken to rejuvenate the Academy's publications. The Academy's newsletter, formerly called WHYDAH was produced and distributed regularly, after a break in production since 2006. Regarding DISCOVERY AND INNOVATION, the management bodies are in place with very committed persons; an issue is ready but unfortunately not yet published due to lack of funding; that's very frustrating for those who wanted to see their articles published.

The AAS Annual report for 2013 provides a very detailed account of the activities of the academy in the year 2013. It shows the programmatic activities of the academy including the scientific activities of the academy, with a focus on young scientists. The academy approved the International Prize Committee for the "Olusegun Obasanjo Prize for scientific discovery and/or technological innovation" and have selected the second winner of the prestigious award. The Academy is making significant progress on establishing robust relationships with a number of organizations among which are the African Union Commission, The Kenyan Government, African National Academies, The World Academy of Sciences (TWAS), the Indian National Science Academy (INSA) and many more.

The Academy has also improved on infrastructure and staffing at the secretariat and still continuing to improve on the efficiency at the secretariat. But the academy still has challenges, major among our concerns is funding. In my point of view, that will be the major point the new team will have to look at, very seriously.

I wish everyone great success in 2014.

Prof Ahmadou Lamine Ndiaye
President, AAS

There is greater hope now than ever of a growing Africa. There is remarkable economic growth in many countries in Africa. The IMF reported that between the years 2000 and 2010, six of the ten fastest growing economies in the world were in Africa; Angola grew at 11.1%, Rwanda, Chad, Ethiopia, Mozambique and Nigeria grew between 7.6% to 8.9%. Africa will soon have the largest workforce, according to the Harvard Business Review; with Africa's population projected to grow to 2 billion by 2050. About 60% of the world's uncultivated arable land is in Africa, mobile technology is exploding, African youth are becoming more daring and entrepreneurial, many countries are discovering oil and other natural resources. Surely, the continent is on a trajectory of growth and there is the need to sustain it.

In addition to economic growth, the continent is also seeing remarkable growth in Scientific Output. The African Science, Technology and Innovation Indicators (ASTII) programme's policy brief of July 2013 - No.1 titled "Scientific Productivity of the African Union Member States 2005-2010" gives a very positive overview of scientific output in Africa. Though the African Union's scientific output is relatively small, it is growing rapidly, with a growth rate similar to that of India, China and Brazil between 2005 and 2010. Generally, the trend of science and technology improvement in the African Union is promising, to start with, but there is more to just producing more.

Despite this growth, the continent has its own challenges too, which seem to be growing just as the economic and scientific achievements grow. Africa has major challenges with poverty; health; population growth and urbanization; productivity; and the threats of climate change. There are food insecurity and nutritional challenges; many who live in slum areas live in makeshift housing with inadequate living space and do not have easy access to safe water and adequate sanitation. The continent has disease challenges; with non-communicable diseases rising. How do we create sustainable cities? Africa has the highest rate of urbanization which, if not managed properly, can bring about vulnerability. The continent has productivity challenges; losses due to malaria incapacitated labor force is estimated to be \$12 billion annually and our manufacturing is idle for 59 days a year due to unstable power supply. On top of these there are climate change induced hazards: flash floods, flooding, sea level rise, drought, desertification, landslide, heat wave, tropical storms, etc. The impacts of climate change on all sectors: agricultural production; livelihoods; biodiversity and ecosystems; water sources; human and animal health, etc. It should also be noted that climate Change is not the cause of Africa's challenges – it only exacerbates them.

The time has come to seriously think of how to make the science outputs relevant to the continent's challenges. How can science help in "sustaining Africa's strong growth over the longer term while significantly reducing poverty and strengthening people's resilience to adversity?" How can science help to sustain Africa's strong growth over the longer term while controlling our population and ensuring improved urbanization?; sustaining Africa's strong growth over the longer term in the face of changing climate and increased climatic variability and its impacts.

From the foregoing, it is clear that the continent has both great challenges and even greater opportunities. Science has a major role in extricating Africa out of its problems contributing to a sustainable future. Research should not be for publishing in journals only. Quality scientific research is good; relevant scientific research is better; and when the quality is marched with relevance, it is best.

From the ED's Desk



It is a pleasure to introduce to AAS Fellows and our distinguished readers "Science*Policy*Africa", the newly re-branded science and policy newsletter of the African Academy of Sciences. The change from Whydah to "Science*Policy*Africa" is a right move as it better reflects the aims and purposes of the publication and also informs readers of what to expect as well as what kind of submissions they can make for publishing.

The timing of this issue matches the eve of the 9th General Assembly (GA) and the 29th Governing Council (GC) meeting of AAS, but also the end of a three year term of the current AAS Governing Council who were elected in 2011.

For me, it also marks the end of a three-year term as Executive Director and the beginning of a second term. It is, therefore, a time of reflection on the paths me and my staff traversed, which were not smooth – there were moments of expectations, despair, challenges and successes, surprises, trepidations, etc. But on the whole, I feel that AAS has now built a momentum which, if maintained, will make it the premium pan-African Academy.

My first term as the Executive Director of AAS under the leadership and guidance of the Governing Council (GC) began with a period of introspection, with profound thinking of how best to position the Academy to meet the expectations of not only the Fellows of the Academy but also raises the hopes and aspirations of young African scientists who may look towards AAS Fellows for guidance and mentoring. This introspection led by the GC resulted in a re-examination of the mandate of the Academy and subsequent revision of the constitution in 2012. The Constitution provided better governance structures and also defined the role of the academy to work with African young scientists. The second major move was the development of a strategic plan for the period 2013-2018. Through wide consultations with AAS Fellows, the GC came up with an ambitious Strategic Plan. Ambitious, yes; but not overreaching. Three annual reports have been produced; 2011-2013. The Academy is, therefore, in a position to present itself, with a clear mandate of who we are, an ambitious plan of what we intend to do, and evidence-backed annual reports of what we have done. These three documents - Constitution, Strategic Plan and Annual Reports - provide a complete picture of who or what we truly are and what we hope to be. For these reasons, we now have a reasonable number of partner organizations who are ready to support and work with us. This is a great achievement by the leadership of AAS over the last three years.

The Academy continues to extend a hand of partnership and appreciation to an increasing number of organizations for choosing to work with us. First and foremost in this regard is the African Union Commission (AUC). We are no longer the "Observer" Academy but rather a "Strategic Partner". AUC is ready to engage us in our niche expertise, our advisory, evaluative and critical assessment skills, in working with the AU continental Prizes. We salute the winners of the African Union Kwame Nkrumah Continental Prize winners (Profs Andre Bationo, from Burkina Faso and Kayode Oyeboade Adebowale from Nigeria). We are also poised to announce on 03 April 2014, the winner of the coveted Olusegun Obasanjo Prize for Scientific Discovery and/or technological innovation. Secondly, we welcome our new partnership with DFID (Department for International Development – UK) for choosing not only to work with us in the project called CIRCLE (Climate Impact Research Capacity and Leadership Enhancement) but also to strengthen our management and administration skills through partnership with the Association of Commonwealth Universities. The list of partners continues with IFS (the International Foundation for Science), IOCD (international Organization of Chemical Sciences for Development), etc.

I look forward to meeting all AAS Fellows at the forthcoming General Assembly which is going to be hosted by HE Denis Sassou N'Guessou, the President of the Republic of the Congo during the Africa Science Week – April 15-19. See you all in Brazzaville.

Prof Berhanu Abegaz, Executive Director, AAS

9th AAS General Assembly

The 9th AAS General Assembly (GA) is to take place in the Republic of Congo, from 14 to 17 April 2014. This follows fruitful deliberations between the African Academy of Sciences and the government of the Republic of Congo, under the leadership of His Excellency Denis Sassou N'guesso. President N'guesso and the AAS have a long history dating back to the formation of the academy. Therefore, the academy is very happy to return to Congo for this very important assembly at an equally important time in the life of AAS. The Republic of Congo Minister of Scientific Research and Technological



Chief Obasanjo, former president of Nigeria, with AAS Fellows at the AAS Secretariat during the 8th GA, 2011

Innovation, who is also the president of the African Ministerial Council on Science and Technology (AMCOST) said he was happy that AAS has chosen Brazzaville as the venue for the meeting, and referred to Brazzaville indeed as the source of the organization.

The government of the Republic of Congo has also communicated to the AAS its decision to appoint the academy to manage the African Science Innovation Award proposed by the President of the Republic of Congo during the fifth session of the African Ministerial Council on Science and Technology (AMCOST) meeting held in Brazzaville in November 2012 and approved by the 22nd Ordinary Session of the Summit of Heads of State and Government of the African Union. Thus, it will be the responsibility of AAS to prepare the conditions of implementation of the award which will be launched in Brazzaville during the African Science, Technology and Innovation Week to be held from 15 to 19 April 2014.

The AAS 9th General Assembly will be taking place at the same time as the Pan African Bioethics Congress (COPAB) organized under the auspices of AMCOST, the African ministers of science and technology meeting. All these activities are clustered under the "African Science, Technology and Innovation Week".

Activities planned for the 9th GA include, a Ministerial Panel Discussion on critical science and technology issues of interest to Africa as well as scientific presentations by eminent Fellows of the AAS. The meeting will also see the induction of new Fellows of AAS for the years 2011, 2012 and 2013. There will be a business meeting of all Fellows of the Academy at which there will be the election of new officers for the academy for the next three years.



President Obasanjo receiving his conference package at the 8th GA in Nairobi



The AAS President, Prof Ahmadou Lamine Ndiaye, at 8th GA in Nairobi

Another important feature of the meeting will be the awarding of the 2013 "Olusegun Obasanjo Prize for Scientific Discovery and/or Technological Innovation". The Olusegun Obasanjo Prize rewards and honors African Scientists who have made outstanding contributions in scientific discovery and/or technological innovation. The prize is awarded every two years to individual scientists or a group of scientists that the Prize Selection Committee deems to have made outstanding scientific discovery or technological innovation that generate social and economic benefits of the development of the continent.

The President and the Governing Council of AAS looks forward to receiving all Fellows and partners at this important meeting.



Chief Obasanjo receives his certificate of Fellowship from the AAS President, Prof Lamine Ndiaye

STIAS: A creative space for the mind in Africa

- Keeping Africa at the forefront of new developments and knowledge breakthroughs



STIAS research centre

STIAS, the Stellenbosch Institute for Advanced Study, is a high-level research institute on issues of the highest relevance for Africa. Based on the model of well-known research institutes like Princeton, Berlin, Uppsala, Stanford and the like, it is first of its kind in Africa. It provides a 'creative space for the mind' where leaders in their respective disciplines can devote their undivided attention to innovative projects, free from the distractions of lecturing and endless administration.

Although it belongs to the 'family' of institutes for advanced study, STIAS is unique in three respects: It serves all disciplines, not only the natural sciences or the humanities; it concentrates on interdisciplinary projects and it has a special focus on Africa. In the words of Dr. Peter Wallenberg, benefactor of STIAS: "In order for us all to be part of tomorrow's discoveries and breakthroughs, we must invest today in the development of our brightest minds. STIAS is meant to be a beacon of hope in this regard. Despite the challenges Africa is facing, it has great potential to deal with these and find enduring solutions ... We have an obligation to ensure that the search for new knowledge continues and that Africa plays its rightful role in this regard."

STIAS was established in 1999 by Stellenbosch University with the intention that it will become an independent institute serving not only one institution. In 2009 it became a Section 21 company, with its own Board of Directors. After fourteen years of steady growth, it has now gained an international reputation. Thus far, more than 350 of the world's leading scientists and leaders have worked at the Institute, including several Nobel laureates. It has welcomed Fellows from all parts of Africa, including Kenya, Mali, the DRC, Senegal, Mozambique, Botswana, Uganda and Ghana.

The Institute strives to provide an interface between the global research community and Africa in Africa, drawing about half of its Fellows from abroad and half from Africa. It also strives to be a meeting point not only between North and South, but also between East and West by including projects and Fellows from Latin America and from Asia.

Unlike many institutions of this kind, STIAS makes special efforts to communicate the results of its research to decision makers, political and eco-

nomics leaders and the public at large. Its annual Round Table is a meeting point between researchers, politicians, and industry to share the latest research results and discuss their implications for policy, the economy and civil society. In 2013 the theme was Alternative Energy Sources and in 2014 Global Mental Health. In 2015 it will be Sustainable Food production and in 2016 Innovation.

The Institute expanded incrementally, and in its first phase of development most of the African Fellows came from South and Southern Africa. It is now at the point where it can engage more comprehensively with scholars from across the continent and in the Diaspora. Important in this regard are the relations with the African Academy of Sciences. Its Executive Director, Prof. Berhanu Abegaz, spent some time at STIAS as a Fellow at the end of 2013 and the beginning of 2014. Although there are clear differences between the two institutions, there are also similarities which could provide the basis for cooperation in the future. One is the fact that both caters for all disciplines, another is the shared emphasis on academic excellence.

A wide range of topics have been investigated by STIAS Fellows – the research section and the annual reports on the website www.stias.ac.za provide some examples of completed projects and of the current work of Fellows. Recently, STIAS has decided to focus on six long-term themes over the next five years: Being Human Today; Crossing Borders; The Future of Democracy; Understanding Complexity; Sustainable Agro-Ecosystems and Health in Transition. There is clearly some overlap with the themes the AAS is currently pursuing.

The Institute is situated on the historic Mostertsdrift property in Stellenbosch, near Cape Town. It is one of the original farms in the area and the calm and secluded setting provides an ideal environment for intensive and uninterrupted work. Fellows have access (besides normal internet facilities) to the combined library collection of the consortium of the five higher education institutions in the region.



A group of 2013 STIAS Fellows

More information about STIAS can be found at www.stias.ac.za Prof. Dr Bernard C Lategan, Founding Director, Stellenbosch Institute for Advanced Study. Email: bcl@sun.ac.za

My Stay at STIAS - Berhanu Abegaz

My fellowship stay at STIAS covered December 2013 and January 2014 and I was able to spend a very productive time in the very tranquil and congenial environment of STIAS. I am most grateful to the leadership of the center for inviting me and for their ability to provide custom-fit responses even to my specific needs and requirements.

A typical day for me at STIAS would begin about 08:30 in the morning, arriving on foot from the guest house (there was a bicycle option if I had wanted it) and get into that wing of the STIAS building via the foot-path access referred to as "Fellows' Entrance", grab a cup of espresso from an ever-ready coffee machine (that also dispenses other warm beverages) and a bar of the famous South African rusk bread, or a fruit, to my office. Offices are labeled by the name of the occupant (no titles – all are equal – they are Fellows). The office is not lavish, but very functional with a desk and an additional table, tele-



phone (open to call anywhere in the world), a desktop computer and a great view of the mountain to the North.

I would then plough into my work for 3 or so hours, having wised up (after the first few days) to put myself off-line from the office e-mail back home. I was told on the

first day to be sure to go down at 12:40 sharp to have lunch with the other fellows. But I got carried away and was late by about 10 minutes. At lunch I was introduced to the other fellows, a few Scandinavians – archeologists, social scientists; a Belgian who specializes in circadian rhythms; a Swede researching on crimes relating to organ trafficking; a South African playwright, and so on. The lunch ambiance is delightful, the food is good, the weather was so good (January) we ate in the patio under the shade of the garden umbrellas.

My post lunch work begins with understandably low rigor after the good food, but intensifies as the day progresses. The sun does not set early in January and so one can work on till nearly eight o'clock. Thursdays are seminar days. Each fellow is expected to give one seminar.

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How scientists can maximise the impact of their research

Researchers working for a university or research institute may assume that because their organisation employs professional communications staff, there is no need for them to communicate their research. However, research communication is far too important to be left to communicators alone.

Does this mean that we should close communications departments and let researchers speak out? Absolutely not. Neither of these extremes would help communicate science effectively. What is needed is researchers and professional communicators working together as one team to maximise the impact of research communications.

And researchers may have something interesting to say, without knowing how to package and present their message, or who to present it to, they may fail to achieve an impact

Speaking with authority

Scientists need to have their voices heard beyond the walls of academic institutions — so communication, not just research, should be part of their work. And who can communicate research better than scientists themselves? They spend years doing their PhDs, then years working in their chosen discipline, often on a very specific problem. That makes them true experts, which translates into credibility in the eyes of the public and allows them to speak with authority on their area of expertise.

People may not trust politicians any more, but, on the whole, they trust scientists. Scientists are seen as knowledgeable and without a hidden agenda. It makes perfect sense for scientists to contribute expert opinions to public debates.

On the other hand, many research institutions employ professional staff to communicate research findings to external stakeholders such as the media, civil society, businesses and decision-makers. So why do scientists themselves need to make the effort?

The reality is that researchers may lack the time to communicate on top of their busy day jobs that might include field work, writing journal articles or teaching. And although they may have something interesting to say, without knowing how to package and present their message, or who to present it to, they may fail to achieve an impact.

It's about teamwork

For effective research communication, scientists and communicators need to work together. Communicators are equipped with technical skills and tools to communicate effectively, but they lack the expert knowledge of the subject matter. They know the *how*, but not the *what*. And they do not have the credibility that scientists have — journalists don't want to interview university press officers; they want to hear from the scientists who did the research.

But professional communicators have an important role too. They can help researchers identify whether they have a story to tell, advise them on how to tell it (when, in what shape and form, and so on), and how to carry that message to its intended audience. For instance, they can advise when to do a press release to promote research findings, when to write a policy brief and when to use Twitter. Each format has its own rules (urgent or less time-sensitive, formal or informal) and is used to reach different audiences.

Finally, communicators can help the researcher stay out of trouble. Scientists may be unaware of potentially controversial or political aspects of their research, for example. Communicators can also help researchers develop their own voice and engage directly with stakeholders. A researcher wouldn't write a press release, but he or she can successfully tweet or blog if given a few pointers on how to get started.

Closing the communications gap

Last October, I travelled to Morogoro, Tanzania, to meet 15 researchers from four African countries working on research integrating human and animal health as part of the Southern African Centre for Infectious Disease

Surveillance. Together with the centre's communications manager, I ran a communications workshop for the researchers. Over two intense days, we examined issues such as understanding audiences, using plain English, writing for the web, using social media and working with policymakers.

At the beginning, not everyone was convinced. "Why should I be bothering with this?", or "academic journals don't want me to write in plain English", or "I can't possibly reduce my 40-page paper to a 140-character tweet" were some of the reactions.

At the end of the workshop my colleagues

Say yes to media interviews, have a go at writing a blog, get that Twitter account. You can do it, and it's worth the effort

were perhaps still a bit sceptical. And two days of writing tweets, didn't transform them into skilled communicators. But they started appreciating the value of research communications a bit more, they gained confidence to talk about their research in simple terms and they agreed to work more closely with the communications staff at their institutions. The latter was, for me, the best indicator of the workshop's success.

So my message to researchers is: don't just sit there assuming that the 'comms people' will do all the communicating. Speak to your press officer early to let them know what you are working on. Listen to their advice and use their expertise. They are there to help you. And don't be afraid to talk about your work. Say yes to media interviews, have a go at writing a blog, get that Twitter account. You can do it, and it's worth the effort.

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My Stay at STIAS - Berhanu Abegaz Continued from Page 5

Hendrik, the director, has his own way of introducing the speakers, no doubt after some research, but in a unique and interesting way. The seminars are most interesting as are the wines and snacks that are served after.

Besides writing a few papers, I also had an opportunity to explore AAS-STIAS relations with the STIAS leadership. We recognized how both organizations have very different history, mission, organizational structure and way of operation, yet both share a deep commitment to three interrelated goals: to promote science in Africa, to regard excellence as the cornerstone of all their activities and to nurture a next generation of top African scholars, thinkers and leaders. AAS and STIAS agreed to find ways by which the two organisations will look at practical ways to optimize synergy and cooperation.

An identified area of cooperation which has already commenced is that STIAS assists AAS's efforts to quadruple the number of fellows from South Africa and, in turn, AAS will assist the efforts of STIAS to identify potential African colleagues to be considered for STIAS Research Fellowships. We look forward with optimism at a fruitful collaboration. We have also identified other areas of cooperation, which will be reviewed by our respective boards for review and implementation.

I cannot finish my write up without making reference to the city/town of Stellenbosch and its environs. It is very pleasant. I enjoyed my early morning walk (jog) along the scenic trails up the mountain, the visit to the many wineries during the weekend, or the famous Postcard café at Start-Conde wines Jonkershoek Valley, a few concerts in Cape Town (45 minutes away), Kristenbosch botanic gardens, not to mention the

many little restaurants on Church and Dorp Streets that I really enjoyed during my stay.

I want to end by acknowledging the team at STIAS and mention Christoff Pauw who visited the AAS secretariat on two occasions and facilitated my arrangements for coming for the STIAS fellowship.



Some 2013 STIAS Fellows

ASTII's CONTRIBUTION TO AFRICA'S TRANSITION TO AN INNOVATION-LED AND KNOWLEDGE-BASED ECONOMY

The African Science, Technology and Innovation Indicators (ASTII) Initiative was launched in 2007 by the New Partnership for Africa's Development (NEPAD) as one of the programme areas of Africa's Science and Technology Consolidated Plan of Action (CPA). The design process begun in November 2003 when the first African Ministerial Conference on Science and Technology (AMCOST) held in Johannesburg, South Africa decided that through AU and NEPAD, member states should develop and use common Science, Technology and Innovation (STI) indicators to measure and compare their science and innovation systems. AMCOST II meeting of September 2005 in Dakar, Senegal further emphasised the importance of science, technology and innovation indicators in the African context. "Science, technology and innovation (STI) indicators are crucial for monitoring Africa's scientific and technological development. They are useful for formulating, adjusting and implementing STI policies.

ASTII specifically supports and strengthens the capacity of Africans to develop and use STI indicators in development planning and policy. The ASTII Initiative supports both evidence-based STI policy formulation and review; enhances regional cooperation and collaboration on S&T and innovation activities or programmes; strengthens Africa's human and institutional capacities for STI indicators and related surveys; contributes to the production of reliable African STI indicators and related data sets available and in use. Under ASTII participating countries undertake R&D and Innovation surveys to produce the data needed to compile indicators on the status of STI. Thus, 19 African countries participated in the first pilot phase (2007-2010).

Key achievements of the pilot phase includes establishment of an intergovernmental committee to be the overall governance structure of ASTII; creation of ASTII national focal points; training workshops to build human capacities in R&D and innovation surveys; and production and disseminating of the first African Innovation Outlook (AIO-2010) report. A 2nd phase of ASTII which builds on the experience of the previous phase was launched in May 2011 in Addis Ababa. This Phase has seen the implementation of the second project of the CPA on STI indicators. The African Observatory for Science, Technology and Innovation Indicators (AOSTI) has been created by the African Union in Malabo, Equatorial Guinea. The number of participating countries has increased to 35 and the interest to participate is growing. The second edition of the African Innovation Outlook (AIO 2013) has been published.

ASTII has stimulated AU member states to start developing STI indicators. It has enabled some countries to start conducting R&D and innova-

tion surveys and to build national capacities for indicators to inform STI policy formulation and review. AU Member States have made strides to create better understanding of the value of STI indicators and the knowledge thereof and are moving towards institutionalizing ASTII through national focal points. Both the first and second phases of ASTII have been a period of experimentation and learning since it is the first time that most AU member states individually and collectively started to work on STI indicators. NEPAD has been instrumental and successful in coordinating and ensuring the success of ASTII and in the establishment of AOSTI. The government of Sweden through the Swedish International Development Agency (Sida) has been the main sponsor of ASTII and participating countries are being encouraged to establish budget lines in support of STI data collection and the ASTII Initiative.

IMPACTS of ASTII

The above interventions by NEPAD/ASTII are important because a number of AU member states now have national STI statistics which they can develop their policies out of. As the case studies from Kenya, Nigeria and Tanzania covered in Box 1 indicate, member states have made decisions based on the messages that have come out from the national survey data. The ASTII Initiative has been unique in that it has been readily implemented by member states and requests for countries to join the Initiative keep coming from the countries that have not yet launched their national surveys. Legitimization of STI data as part of national statistics has brought in a high degree of independence among the member states which were traditionally dependent on sources outside the continent for them to get status report on STI in their countries. This was not a reliable source given that more often than not, statistics on most African countries were missing due to non-availability of data. It was therefore uncommon to get data tables where the majority of the African countries had blanks for most of the parameters.

The socio-economic impacts of ASTII and its impacts on the science community are likely to be felt in the medium to long term because of the nature of the programme. Suffice to say that at the policy formulation and implementation level African countries are using the data in the African Innovation Outlook in planning and monitoring the performance of their programmes and increasingly allocating funds for the conduct of STI surveys. All the 35 countries participating in the ASTII initiative have contributed both in-kind and cash to the costs of conducting national surveys. Statistics from ASTII are also cited in many international fora as a reliable source of data. Thus, the ASTII Initiative has institutionalized a culture of collection and use of STI statis-

tics on the continent. It is expected that STI data will have similar impacts on other sectoral policies particularly; Education, Commerce and Industry (Trade and Investment), Small and Medium Enterprises (SMEs) and overall Economic Strategies on the continent. To achieve better impact and the use of STI indicators in development, experts must embark on strategic popularization, sensitization and advocacy among stakeholders, policy makers and the executives in government and the private sector

CHALLENGES

It has been observed that the transition from natural resources based to knowledge and innovation led economy in many AU members States is hampered by a number of challenges and these include the following:

- Difficulty to link STI to poverty reduction, job creation, sustainable livelihoods and improved well-being of citizens.
- Limited capacity of national stakeholders to sustain an adequate national system of innovation (NIS).
- Lack of science and technology desks in more than half of the 8 regional economic communities
- Availability of knowledgeable human capital familiar with STI measurement
- Limited resourcing of the responsible bodies at national level to conduct and analyse data from R & D and Innovation surveys.

POLICY RECOMMENDATIONS

ASTII recommendations for African countries to transition from natural resources based to knowledge and innovation led economy include:

- Countries should involve business sector in the national innovation system by formulating policies which allow incentives to firms investing more in R&D and Innovation activities;
- Countries develop their capacity for data collection, analysis and use at the national, regional and continental levels;
- STI related indicators should be linked to the work performed by Africa's peer review mechanism (APRM)
- National Parliaments and should be actively involved in the process of enhancing the measurement of STI for evidence-based policy formulation and review in member countries.
- Motivate the youth to pursue their studies and careers in science and technology
- Put in place policies and strategies to motivate business enterprises and civil society to participate in STI data collection and production of indicators.

For further information, contact: Prof. Luke E. Mumba, ASTII Programme Coordinator. Email: ukem@nepad.org

FELLOWS OF AAS

SEGENET Kelemu



Date of Birth: 20 May, 1957

Country: Ethiopia

Gender: Female

Field: Agricultural Sciences;
Plant pathology

Current position: Director General, International Center for Insect Physiology and Ecology (*icipe*), Nairobi, Kenya.

Education: BSc, Plant Sciences (Addis Ababa University, Ethiopia, 1979); M.Sc. Plant Pathology/Genetics from Montana State University, USA, 1985); PHD Molecular Plant Pathology, Kansas State University, USA, 1989)
Postdoc: Prof. Alan Collmer (Cornell University, USA, 1989-1992)

Experience/Employment: Dr Kelemu is the incoming Director General of the International Center for Insect Physiology and Ecology (*icipe*). She has been the Vice President for Programmes at the Alliance for a Green Revolution in Africa (AGRA) for about a year. She joined AGRA from the International Livestock Research Institute (ILRI), where she served as Director of the Biosciences Eastern and Central Africa (BeCA) a position she held for five years. Previously, Dr Kelemu was a Senior Scientist, and later the Leader of Crop and Agroecosystem Health Management, at the International Centre for Tropical Agriculture (CIAT) in Cali, Colombia. She has also worked as a researcher at Cornell University, and at Montana and Kansas State universities, in the USA.

Accomplishments: Dr. Kelemu has vast experience in agricultural research, in capacity building and in managing research for development. Over the past two decades, her own research and that of teams under her leadership has contributed to addressing a variety of key agricultural constraints in Africa, Asia, Latin America and North America. She has received many international accolades, including CIAT's Outstanding Senior Scientist Award, for her numerous contributions to the Centre and its mission, and the prestigious Friendship Award granted by the People's Republic of China, for outstanding contributions to China's economic and social development. In 2011, Dr Kelemu, jointly with *icipe* scientist Prof. Zeyaur Khan, was awarded the TWAS Prize for Agricultural Sciences, by TWAS.

Dr. Kelemu is an innate teacher and has supervised and mentored numerous BSc, MSc, and Ph.D. students from various countries including China, Colombia, Ethiopia, Brazil, USA.

Recognitions: CIAT's Outstanding Senior Scientist Award; the prestigious Friendship Award granted by the People's Republic of China, for outstanding contributions to China's economic and social development. In 2011, Jointly with *icipe* scientist Prof. Zeyaur Khan, was awarded the TWAS Prize for Agricultural Sciences, by TWAS.

Member of the American Phytopathological Society, International Association for the Plant Protection Sciences (IAPPS), international advisory boards and others.

Total number of publications = 90

OKEKE Francisca Nneka



Date of Birth: 14 October, 1956

Country: Nigeria

Gender: Female

Field: Geological and earth sciences; Geophysics

Current position: Professor of Physics

Education: BSc: Physics, University of Nigeria Nsukka, Nigeria, (UNN) 1980; MSc Geophysics (UNN) 1989; PHD Geophysics UNN, 1995 MEd Curriculum Physics 1985, UNN, PGDE, 1983, UNN, Postdoc: Mentor, (University of Tokyo, Japan, 1999-2000)

Experience/Employment: 2000 to date Professor of Physics, University of Nigeria, Nsukka; 1996-2000 Senior Lecturer; 1992-1996 Lecturer 1; 1989-1992 Lecturer 2; 1980-1989 Tutor, Queen of Rosary College Nsukka; Dean, Faculty of Physical Science, UNN 2008-2010; Head, Department of Physics and Astronomy, 2003-2006; Chairperson Faculty Welfare 1990-2000, UNN; Chairperson Departmental Timetable 1990-1996, UNN; Member Postgraduate Faculty Committee 1996-2000, UNN; Member, Disciplinary Committee of investigation into alleged admission racket, 2005, UNN. Member, Disciplinary Committee of investigation into Exam malpractice, 1995-1999, UNN

Accomplishments: I have served as external examiner/assessor to several Universities both international and National, as reviewed editor for many journals. Supervised 10 PhD, 21 MSc successfully, and 14 and 15 still under my supervision respectively. Research visits and collaborations include; Morgan State University, Baltimore, USA, Harvard Smithsonian Centre, Cambridge, USA, University of Natal, Durban, South Africa, University of Tokyo Japan, CPTEC Brazil, India Institute of Geomagnetism. We have been able to discover from our work that Sq current system and mantle conductivity are related to climate change an innovation in my area. Further investigation is still being carried out.

Recognitions: Laureate, 2013, L'Oreal-UNESCO Award for Women in Science for the Physical Sciences; Fellow, Nigerian Academy of Science; Fellow, Nigerian Institute of Physics; Fellow, Japanese society for Promotion of Science; Merit Award, 2002, as the first female Professor in Science and Engineering in UNN; Award of Excellence, 2007 by NAPSS, UNN; Award of Honour, 2008 by NAPSS, UNN; Contemporary Who's Who Award, 2004 USA; Professional Service Award, 2005, (Rohr Club); Great African Merit Awards, 2006; ASEG Australian Society of Exploration Geophysicists; AAWS African Association of Women Society; OWSD Organization of Women in Science in Developing world; AGU American Geophysical Union; IAU International Astronomical Union; Board member, INWES, International Women in Engineering and Science; Member, WIP, Women in Physics; SGEPSA Society of Geomagnetism and Earth, Planetary and Space Sciences; Governing Council Member, ANSTI.

Total number of publications = 72

FELLOWS OF AAS

MERZOUK Hafida



Date of Birth: 22 July, 1962
Country: Algeria
Gender: Female

Field: Biological sciences;

Current position: 1. Professor, 2. Director of laboratory of physiology, physiopathology and biochemistry of nutrition.

Education: BSc: (University of Tlemcen, Algeria, 1988); MA/MSc (University of Tlemcen, Algeria, 1991); PHD (University of Tlemcen, Algeria, 1999 and University of burgundy, Dijon, France, 2000) Postdoc: Mentor in supporting PHD students and beginning teachers, (University of Tlemcen, Algeria, 2004 to 2013)

Experience/Employment: Research leader and professor at the university of Tlemcen. Teaching courses related to Cellular Biology, Molecular and cellular aspects of development, Metabolism regulation, Nutrition, Physiology and physiopathology. Director of doctoral theses on various topics such as diabetes, obesity and hypertension and their relationships with nutritional status, pesticides and their effects on health, pregnancy and maternal foetal placental unit. Good laboratory experience with performed experiments consisting of cell function, metabolic parameters including enzyme activities, oxidant/antioxidant markers in humans and laboratory animals.

Accomplishments: Head of national and international projects related on Effects of dietary lipids on lipoprotein metabolism and the modulation of immune system in diabetes (2000-2003); Obesity in children: causes and consequences, preventive effects of dietary n-3 polyunsaturated fatty acids (2005-2010); Pregnancy and obesity: oxidant antioxidant balance (2011- 2013); Pesticides and health (2011-2013).

Recognitions: Prize of scientific publications by ANDRS, a national agency . Active member of the Algerian society of nutrition and orthomolecular medicine to provide information on the importance of adequate nutrition for general population, and to promote preventive measures focus on maternal and children nutritional education.

Total number of publications = 43

MOPHOU Gisèle L. A.



Date of Birth: 12 April 1966
Country : Cameroon
Gender: Female

Field: Mathematical sciences; Evolution equations; fractional differential equations, almost periodic and almost automorphic functions; optimal control and controllability.

Education: i) Licence de Mathématiques (B.S. Mathematics) : Université des Antilles et de la Guyane, France, 1994. ii) Maîtrise de Mathématiques et Applications aux Sciences Fondamentales (Master's in Pure and Applied mathematics) : Université des Antilles et de la Guyane, France, 1996. iii) Diplome d'Etudes Approfondies d'Analyse Numérique (Advanced Diploma in Numerical Analysis) : Univeristé de Paris VI, 1997. iv) Ph. D Mathematics : Université des Antilles et de la Guyane, 2000 Optimisation-Contrôle (A.O.C.); 2009-present : Research Associate, Centre d'Etude et de Recherche en Economie, Gestion, Modélisation et Informatique Appliquée (C.E.R.E.G.M.I.A.)

Accomplishments: i) Co-supervisor of Ph. D Dissertations (William Dimbour, Carole Louis-Rose; Michelle Mercan); Master's Theses (Cynthia Belfort; Jimmy Noel; Joseph Claire). ii) Co-organizer of: The research school: CIMPA-UNESCO-UAG, Population dynamics, Control and Applications, Guadeloupe, 2009; The Special Session on Recent Advances in Evolution Equations and Applications , American Mathematical Society (AMS), San Francisco, U.S.A., 2010; The Special Session on Recent Advances in Evolution Equations and Applications", Tampa, USA, 2010. iii) Reviewer for : Mathematical Reviews and Zentralblatt Maths

Recognitions: i) Membership of: International Society for Applied Analysis and Computations; International Federation of Non-linear Analysts; Société de Mathématiques Appliquées et Industrielle ; National Association of Mathematicians ii) Editor of :African Diaspora Journal of Mathematics; International Journal of Evolution equations; Pioneer Journal of Mathematics and Mathematical Sciences; Journal of Nonlinear Evolution Equations and Applications; Journal of Global Journal of Mathematical Sciences.

Total number of publications = 40

The World's Women 2010: Trends and Statistics

http://unstats.un.org/unsd/demographic/products/Worldswomen/WW_full%20report_color.pdf

- Women account for two thirds of the world's 774 million adult illiterates – a proportion that is unchanged over the past two decades.
- While the overall progress in primary education in the past decade is encouraging, major barriers stand in the way of progress: 72 million children – 54 per cent of them girls – are out of school.
- Men's dominance in tertiary education has been reversed globally and gender disparities currently favour women, except in sub-Saharan Africa and Southern and Western Asia.
- Globally, women's participation in the labour market remained steady in the two decades from 1990 to 2010, hovering around 52%. In contrast, global labour force participation rates for men declined steadily over the same period, from 81 to 77%.
- In 2010, women's labour force participation rates was below 30% in Northern Africa and Western Asia; below 40% in Southern Asia; and below 50% in the Caribbean and Central America.
- Girls generally work longer hours than boys, whether engaged in housework only, employment only or both.
- Employed women spend an inordinate amount of time on the double burden of paid work and family responsibilities; when unpaid work is taken into account, women's total work hours are longer than men's in all regions.
- Analysis show school attendance declines as number of hours spent on household chores increases – and declines more steeply for girls than for boys.
- On average only 17% of parliamentary seats are occupied by women; 17% women among ministers; 7 of 150 elected Heads of State in the world are women, and 11 of 192 Heads of Government.

Dr Segenet Kelemu receives L'Oréal-UNESCO For Women in Science award



Dr Segenet Kelemu

Fellow of the African Academy of Sciences and Director General of the International Centre of Insect Physiology and Ecology (*icipe*), Dr Segenet Kelemu, is among five outstanding women scientists who have received the 2014 L'Oréal-UNESCO For Women in Science awards, at a ceremony to be held in Paris, France on March 19.

The L'Oréal-UNESCO For Women in Science awards are presented each year to honour women scientists who represent unique career paths combining exceptional talent, a deep commitment to their profession and remarkable courage in a field still largely dominated by men.

Dr Kelemu, who is the 2014 laureate for Africa and the Arab States, is being honoured for her research on how microorganisms living in symbiosis with forage grasses can improve their capacity to resist disease and adapt to environmental and climate change. Her work is providing new solutions for ecologically responsible food crop production, especially by local, small-scale farmers.

DOCTOR SEGENET KELEMU is the first woman from her region to attend what was then Ethiopia's only university. After having studied in the United States and worked in Colombia, she returned to Africa and is now at the heart of an impressive international scientific research network.

The African Academy of Sciences and "Science*Policy*Africa" congratulates Dr Segenet Kelemu on her achievement and wishes her more successes.



Mosquitoes carrying malaria-causing parasite develop increased desire for sugar

Researchers from the International Centre of Insect Physiology and Ecology (*icipe*) in Nairobi, Center for Medical, Agricultural, and Veterinary Entomology of the US Department of Agriculture, Center for Chemical Ecology Pennsylvania State University and Center for Development Research, University of Bonn have monitored the attraction of *Anopheles gambiae* mosquitoes (pictured) to plant odours and the investigative behaviour of the insects around nectar sources.

The research highlights the need to understand the mechanisms underlying vector-parasite interactions in malaria systems, which is of paramount importance for disease control.



Female *Anopheles gambiae* feeding on *Parthenium hysterophorus* (Photo courtesy- Robert Copeland/Vincent Nyasembe, *icipe*)

Plasmodium parasites are known to manipulate the behavior of their vectors so as to enhance transmission. From an evolutionary standpoint, behavior manipulation by the parasite should expose the vector to limited risk of early mortality while ensuring sufficient energy supply for both it and the vector. What is not known is whether this vector manipulation also affects vector-plant interaction and sugar uptake. The study showed that the attraction of *Anopheles gambiae* s.s. to plant odors increased by 30% and 24% after infection with the oocyst and sporozoite stages of *Plasmodium falciparum*, respectively, while probing activity increased by 77% and 80%, respectively, when the vectors were infected with the two stages of the parasite. The study also reveals an increased sugar uptake at the oocyst stage that decreased at the sporozoite stage of infection compared to uninfected *An. gambiae*, with depletion of lipid reserves at the sporozoite stage. The researchers interpret their results as pointing to a possible physiological adjustment by *An. gambiae* to *P. falciparum* infection or behavior manipulation of *An. gambiae* by *P. falciparum* to enhance transmission. The research team concludes that the nectar-seeking behavior of *P. falciparum*-infected *An. gambiae* appears to be modified in a manner governed by the vector's fight for survival and the parasite's need to advance its transmission.

The research was published on 17 February in the Volume 24 of *Current Biology*. The research team comprised Vincent O. Nyasembe, Patrick Sawa, and Baldwin Torto of the International Centre of Insect Physiology and Ecology (*icipe*) in Nairobi, Kenya; Peter E.A. Teal, of the Center for Medical, Agricultural, and Veterinary Entomology, US Department of Agriculture, Agricultural Research Service, USA; James H. Tumlinson of the Center for Chemical Ecology, Department of Entomology, Pennsylvania State University, USA; and Christian Borgemeister, Center for Development Research, University of Bonn, Germany and also formerly of *icipe*.

Baldwyn Torto and Christian Borgemeister are both Fellows of the African Academy of Sciences.



Baldwin Torto (left) and Christian Borgemeister (right), AAS Fellows

African Union honors outstanding African scientists through the Kwame Nkrumah Scientific Awards

Addis Ababa, 30 January 2014 - The African Union Commission has awarded USD100 000 each from the Kwame Nkrumah Scientific Awards to two outstanding African scientists. The presentation took place in January 2014 at the African Union Headquarters in Addis Ababa, Ethiopia in the Framework of the 22nd Ordinary Session of the Assembly of Heads of State and Government. The Commissioner for Human Resources Science and Technology, Dr. Martial De Paul Ikounga announced this year's winners.

The prizes were handed out by the newly elected Chairperson of the African Union and President of the Islamic Republic of Mauritania, Mr. Mohamed Ould Abdel Aziz to Professor Andre Bationo, from Burkina Faso, winner in the field of Earth and Life Sciences and Professor Kayode Oyeboade Adebowale, from Nigeria, winner in the field of basic science, Technology and innovation.

Dr. Nkosazana Dlamini Zuma congratulated

the two laureates and said Science and Technology have to play a very important role in solving challenges in infrastructure, develop-

particularly the European Union and the African Academy of Sciences for working with the Commission on these projects.



AU Chairperson and President of Mauritania Mr. Abdel Aziz handing over the prizes to Prof. Andre Bationo, from Burkina Faso winner in the field of Earth and Life Sciences and Prof. Kayode Oyeboade Adebowale. [AU Photo]

ment and energy among others. "The Kwame Nkrumah award program is a key flagship program of the African Union which aims to raise awareness on the use of science and technology in our continent" she added. Dr. DlaminiZuma also thanked the partners, par-

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.

A case for Indigenous Knowledge in Environmental Management

By Benji Apraku Gyampoh, AAS

The United States Environmental Protection Agency (EPA) has released a report (January 2014) titled "A Decade of Tribal Environmental Research: Results and Impacts from EPA's Extramural Grants and Fellowships Programs". This report caught my attention as soon as I heard of it. It highlights the accomplishments and impacts of more than a decade of supporting Tribal Environmental Research. The report is available for download at www.epa.gov/ncer/tribalresearch. The findings of this report confirms the importance of Indigenous Knowledge (IK) in Environmental Management. There is great need for more research into IK in climate change adaptation and I am happy that this report also makes a very strong case for IK in environmental management.

Indigenous people have been confronted with changing environments for millennia and have developed a wide array of coping strategies — their traditional knowledge and practices provide an important basis for facing the even greater challenges of climate change. "There is much to learn from indigenous, traditional and community-based approaches to natural disaster preparedness. As communities live within a given environment for a long period, they acquire a deep understanding and learn to adapt within their environment. In studying IK, it's not just about which practices work, understanding why others fail is just as im-

portant to avoid perpetuating mistakes.

The US EPA established the Tribal Environmental Health Research Program in 2000 through the Science To Achieve Results (STAR) grants and fellowships programs. This is the kind of primary research that is very commendable and many countries must take a cue from this. A people can only truly develop scientifically when they master the knowledge already around them. Since its inception, the Tribal Environmental Health Research Program has funded 10 STAR grants for tribal environmental health research, many of which are conducted on tribal lands by researchers from tribal colleges and universities.

This highly commendable programme by the US EPA has yielded key data, tools, products, methods and knowledge. The use of such knowledge discovered can help to better define and reduce the health risks faced by tribal populations, protect natural resources essential to cultural and spiritual practices, and supports ecological knowledge and tribal practices for protecting and preserving the earth for future generations.

One important lesson to take from this report, "A Decade of Tribal Environmental Research: Results and Impacts from EPA's Extramural Grants and Fellowships Pro-

grams" teaches is the importance of using research data in making informed decisions. It is not just enough to put money into research because there is a cry for investment in research and development. It is crucial that the knowledge discovered or produced from such research is used for the benefit of the society. According to the EPA report, "results from STAR grants and fellowships have influenced State and tribal regulations and management plans. For example, the states of Washington and Oregon have used STAR data to reexamine and revise their state water quality standards. These revisions offer greater protection of tribal populations whose cultural practices and traditional lifeways could result in higher exposures to water contaminants. The Cherokee Nation used results from research by a STAR fellow to design its Tribal Integrated Resource Management Plan for natural resource planning and management on Cherokee lands.

This is a way to go!

Recommended for reading: Gyampoh, B. A. and Asante, A.A., 2011. MAPPING AND DOCUMENTING INDIGENOUS KNOWLEDGE IN CLIMATE CHANGE ADAPTATION IN GHANA. Africa Adaptation Programme. United Nations Development Programme. http://www.undp-aap.org/sites/undp-aap.org/files/Ghana_Mapping%20and%20Documenting%20Indigenous%20Knowledge%20in%20CCA%20in%20Ghana_2011.pdf

ADVANCING THE FRONTIERS OF EXTENDED PRODUCER RESPONSIBILITY (EPR) IN DEVELOPING COUNTRIES FOR E-WASTE TAKE-BACK: GHANA IN FOCUS

The electronic waste (e-waste) menace around the world has been a major environmental and health concern to governments. In many developing countries, balancing the need to bridge the so-called 'digital divide' and curbing technology dumping has often put governments, manufacturers and importers on a collision course.

Agbogbloshie, previously an almost unknown suburb of Ghana's capital Accra, has shot into prominence lately not for the best reasons. Agbogbloshie has gained notoriety as one of the world's biggest e-waste dumpsite. Analysis of water and soil samples taken from this e-waste scrap yard in Ghana by Greenpeace International (a global campaigning organization) revealed severe contamination with hazardous chemicals.

Ghana has witnessed a rapid growth in the inflow of mobile phones and computers and their peripherals and many other electronic gadgets, thanks to a flourishing communications sector that has allowed in multiple telecommunication companies. Multi-simming, the ownership of more than one active mobile phone line by one person is commonplace in Ghana, and that accounts for the high mobile phone penetration. The total number of active mobile phone lines in Ghana as at November, 2012 stood at 25,344,745, which is marginally higher than the estimated population of Ghana, which stood at 25,241,998. Mobile penetration in Ghana therefore stands at 100.41%. Official data released by the Ghana Shippers Authority indicates that the country imported 31,400 metric tons of used Electrical and Electronic Equipment (EEE) in 2010, 75% more than what was imported into the country in 2009. According to UNEP's recent statistics, an estimated 20 to 50 million tons of electronics waste is generated annually which, according to one estimate, if loaded on railway trucks would produce a train that would stretch once around the world.

E-waste contains hazardous constituents that may negatively impact the environment and affect human health, if not properly managed. E-waste is more hazardous than many other municipal wastes because EEE contain components made of deadly chemicals and heavy metals which can potentially damage the nervous system, the kidneys, bones, the reproductive and the endocrine systems. Many of the chemicals present in the e-wastes are persisting in the environment, which means their effecting will be abiding for many centuries.

Ghana, like many African countries, is the destination for obsolete computers and other e-wastes from the developed world, mainly Europe and America. There is incessant inflow of hundreds of containers filled with used EEE at the port. Most of the electronic gadgets arriving in Ghana and are labeled as 'second-hand goods' are in reality e-waste. E-waste dumping has become a major problem due to the fact that there are no formidable policies and laws governing the entry of Electrical and Electronic Equipment (EEE), e-waste trade and recycling in Ghana and in many developing countries. Presently, dumping of hazardous waste from advanced countries in developing countries is prohibited by the Basel Convention, an international treaty that was designed to reduce the movements of hazardous waste between nations, and to specifically prevent transfer of hazardous waste from developed to less developed countries. EU laws also prohibit the export of e-waste to other countries.



Electronic waste dumpsite at Agbogbloshie in Accra, Ghana

While African governments are gradually becoming aware of the problems of e-waste, few are taking steps on how to address this issue comprehensively. Some countries are focusing on the age of imported EEE while others are considering a complete ban of second-hand EEE from entering their territories; Ghana and Uganda, respectively, are examples of the two foci above. These notwithstanding, it is worth mentioning that policies and regulations focusing on regulating imports and banning have faced numerous setbacks in their enforcement in some jurisdictions.

Most developed countries have in place legislation mandating electronic manufacturers and importers to 'take-back' used Electrical and Electronic Equipment at their end-of-life (EoL) based on the principle of extended producer responsibility (EPR). I am advocating that the frontiers of EPR must be extended to developing countries for e-waste take-back. Adoption and implementation of EPR in developing countries is necessary in the light of the present high level of trans-boundary movement of e-waste into developing countries and the lack of basic or state-of-the-art recycling and waste disposal facilities. Electronic producers should take up the responsibility of taking-back their products to recycle them in an acceptable way when they become waste.

The adoption and implementation of Extended Producer Responsibility (EPR) in developing countries may not be the only silver bullet that may nib the present and impending dangers of e-waste in the bud. A change in attitude by governments, appropriate legislation dealing specifically with e-waste, control of electronic waste dumping coupled with implementation of EPR and transfer of technology on sound recycling of e-waste are the key issues in effective management of e-waste in developing countries.

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Prof Fetene, ED of EAS (right) Prof Abegaz (left)

Executive Director of Ethiopian Academy of Sciences pays working visit to AAS

Professor Masresha Fetene, the newly appointed Executive Director of the Ethiopian Academy of Sciences (EAS) paid a working visit to the AAS on Thursday, 6 February 2014. Prof Fetene who took office in January 2014 used the visit to have personal meetings with the Programme Officer of AAS, Programme Assistant as well as the Finance and Administrative Manager of AAS to learn about their activities in their roles.

Prof Fetene also had a lengthy meeting with the Executive Director of AAS to discuss a range of issues from the administration of AAS to how the EAS and AAS can collaborate on identified programmes and projects. The AAS signed a Memorandum of Understanding (MoU) with the EAS in 2013.

IDRC Senior Programme Specialist visits AAS for Discussion on CIRCLE and ACCFP

On 21 February 2014, Ms Edith Adera, Senior Program Specialist, Climate Change and Water, Agriculture and Environment of the International Development Research Centre (IDRC) visited the AAS for discussions on synergy between AAS and IDRC in areas of climate change, specifically the Africa Climate Change Fellowship Program (ACCFP) and the Climate Impact Research Capacity and Leadership Enhancement (CIRCLE) Fellowship Programme. At the meeting, Dr. Gyampoh, Programs Officer of AAS, gave an overview presentation on the African Academy of Sciences and focused on the DFID-funded CIRCLE project which had just concluded the inception phase

Ms. Adera, shared the experiences of IDRC in implementing ACCFP phase 1 and 2. She added that the lessons learnt from the 2 phases were used to redesign the implementation of phase 3. She commended the concept design of the CIRCLE programme and believed that a good implantation of the con-

cept will make great impact in individual and institutional capacity building in climate impact research in Africa. It was noted that CIRCLE and ACCFP program complement each other in a very unique way and it was therefore very important for the two organizations to work collaborate in seeking synergies for the success of the programs.

The very useful meeting concluded that AAS/CIRCLE and IDRC/ACCFP Phase 3 have good lessons to learn from each other and to complement each other to optimize the success of their implementation. It was agreed that sharing of information and experience will be very useful areas such as ACCFP Host institution; M & E Framework and tools; Information; Quality Assurance; Alumni and Networking of the Fellows in the programs; CIRCLE concept design and On-line applications and review.

Developing collaboration between AAS and the Global Young Academy



Leaders of GYA at the offices of the ED of AAS.

Leaders of the Global Young Academy visited the AAS on 6 February 2013 to explore areas of collaboration between the GYA and AAS. The visit to AAS followed the 1ST AFRICA YOUNG ACADEMIES REGIONAL CONFERENCE held in Nairobi, Kenya, from 2-5 February 2013. The theme of the conference was "Accelerating Science for Development in Africa by Increasing the Momentum and Impact of National Young Academies". At the conference, the AAS Programme Officer, Benjamin Gyampoh made a presentation on "Science for development in Africa: Priorities and enablers –an African perspective". The leaders of the GYA, therefore, visited the AAS and held fruitful discussions with the ED on how the two organisations can partner in the development of young African Scientists. The Global Young Academy (GYA), is a rallying point for outstanding young scientists from around the world to come together to address topics of global importance. GYA, as of 2013, had 155 members who are leading young scientists from 55 countries and all continents, and 63 alumni.

DFID conducts review of Inception phase of CIRCLE

The UK government approved £4.85 million over 5 years (2013 to 2018) to strengthen the capacity of African scientists to undertake and use research on climate change and its local impacts on development in a fellowship programme called "Climate Impacts Research Capacity and Leadership Enhancement (CIRCLE) in Sub-Saharan Africa. The programme is to be implemented by the African Academy of Sciences (AAS) and the Association of Commonwealth Universities (ACU). The strengthening of high quality research skills will enable African institutions and researchers to help develop local solutions to the impacts of climate change at local and national level.

An initial six-month "Inception phase" to determine the level of interest among potential fellows, home and host institutions has just been completed and is under review by DFID in order to reach a decision to either proceed as per original scope and scale, or on a reduced level or even terminate the programme.

The Inception Phase ended on 31 January 2014 with a number of activities, chief among them was to gauge the level of interest in the programme from African researchers and institutions. During the inception phase ACU and AAS identified potential home and host institutions through a call for

Expression of Interest (EoI) which received tremendous response. An initial list of potential home and host institutions and candidates has been drawn from those who submitted EoIs. A DFID team visited the AAS on February 12 and 13, 2014 for the review of the inception phase based on agreed terms of reference for the 6 month period. The DFID review team and AAS also visited the BioSciences Eastern and Central Africa hub at the International Livestock Research Institute (BeCA-ILRI hub) in Nairobi; the organisation did submit and EoI to become a host institution for the CIRCLE programme.



AAS Secretariat building at No 8. Miotoni Lane, Karen, Nairobi. A quiet, serene location very suitable for meetings.



Reception Area of AAS. Also serves as registration area during meeting; also used for cocktail and other receptions.



Meeting Room 1. First of 3-in-1 meeting rooms equipped with a projector and sound projection facilities.



Meeting Room 2. Separated from Meeting rooms 1 and 3 by a movable partition. Partition can be opened to get a big conference room.



AAS Boardroom. Also serves as a meeting room equipped with a projector and sound facilities.

UNESCO AFRICA OFFICE TO WORK CLOSELY WITH AAS



Dr Peggy Oti-Boateng, Dr Abou Amani and Dr Felix Toteu of UNESCO Africa office in Nairobi in a discussion with the AAS Executive Director, Prof Berhanu Abegaz (extreme left).

On Thursday 6 April 2014, officials from the UNESCO Africa office based in Nairobi paid a working visit to the secretariat of the African Academy of Sciences. The UNESCO office was represented by Dr Abou Amani, (Senior Programme Specialist for Water Sciences), Dr Peggy Oti-Boateng (Coordinator, for the African Network of Scientific and Technological Institutions (ANSTI) and Programme Specialist for Basic and Engineering Sciences) and Dr Felix Toteu (Programme Specialist for Earth Sciences). Dr Felix Toteu is also a Fellow of the AAS.

The main agenda for the meeting was how the two organisations can collaborate effectively. UNESCO and AAS have been working together in the past on several programmes, last one being the project aimed at the building awareness of solar geoengineering among African researchers, media and policy makers. The immediate past Africa Director of UNESCO, Prof JJ Massaquoi was a fellow of AAS and helped in deepening the relationship between AAS and UNESCO. After presentations from both AAS and UNESCO, it became evident that there are more areas of similarity that the two organisations can synergise and benefit from the strengths that the UNESCO and AAS have.

Among the many things that the two organisations agreed to do was the institution of monthly seminar/lecture series to be jointly convened by AAS and UNESCO.

World leading experts gather in Stellenbosch to plan how SKA will be used



The "Who's Who" of global radio astronomy gathered in Stellenbosch for one week from 17 –21 February 2014 to discuss future science with the SKA. The SKA Project is an international enterprise to build the largest radio telescope in the world. The more than 160 delegates at the conference included high-level delegations from China, South Korea, the UK, Germany, Italy, Sweden, Argentina, Australia and the US. "There is a global buzz about doing cutting-edge science with the SKA and the project is already attracting some of the world's foremost scientific talent to South Africa," SKA SA project director Dr Bernie Fanaroff said.

At the opening session of the conference, the Director General of the SKA Organisation Professor Philip Diamond emphasised the fact that the SKA would be a global observatory and not an experiment. "With the SKA we will be able to see fuller, reach deeper and understand better. It will literally expand our horizons and give us a much clearer picture", explained astrophysicist Professor Katherine Blundell from University of Oxford in the UK.

A special session at the conference focused on making the science of radio astronomy accessible to learners, including a group of children from the primary and secondary school in Carnarvon. Top scientists took on the challenge to present their research to these young people in small groups and to answer all their questions about astronomy and the Universe.

The 2014 TWAS-Lenovo Science Prize in Biological Sciences

TWAS, The World Academy of Sciences for the advancement of science in developing countries, was founded in 1983 in Trieste, Italy. It is administered by UNESCO through an agreement between the Italian government and UNESCO. TWAS's principal aim is to promote scientific capacity and excellence for sustainable development in the South.

Lenovo is a USD 34-billion personal technology company – and the largest PC company in the world, serving customers in more than 160 countries. Dedicated to building exceptionally engineered PCs and mobile internet devices, Lenovo's business is built on product innovation, a highly efficient global supply chain and strong strategic execution.

PURPOSE

Together, TWAS and Lenovo are offering the TWAS-Lenovo Science Prize, which is intended to give international recognition and visibility to outstanding scientific achievements made by individual scientists in developing countries.

FIELDS

The specific subject area for nominations will

change in each year.

The first four-year cycle (2013-2016) will focus on the basic sciences, rotating between physics and astronomy (2013), biological sciences (2014), mathematics (2015) and chemical sciences (2016).

AWARD

The prize carries a monetary award of USD100,000, generously provided by Lenovo, a medal and a certificate bearing a citation highlighting the major contributions for which the prize is awarded. The prize will be presented to the recipient at a special ceremony arranged by TWAS and Lenovo.

ELIGIBILITY

Candidates must be nationals of developing countries, living and working in the South for at least the last 10 years. The prizes will only be awarded to individuals for scientific research of outstanding international merit carried out at institutions in developing countries.

EVALUATION

The evaluation is carried out by a scientific committee, chaired by the TWAS president, consisting

of an authoritative and international jury and a designated representative from Lenovo. Jury members and previous winners of the Trieste Science Prize (also administered by TWAS) are not eligible for the TWAS-Lenovo Science Prize.

NOMINATIONS

Nominations are invited from TWAS members, selected individuals, as well as from science academies, national research councils, universities and scientific institutions. Nominations of women scientists are particularly encouraged. Self-nominations will not be accepted.

ENQUIRIES

Additional information and nomination forms are available from the TWAS Secretariat

(prizes@twas.org, www.twas.org).
Nominations for the 2014 prizes should reach the TWAS Secretariat by 22 May 2014 at:

TWAS-Lenovo Science Prize
TWAS Secretariat
ICTP campus, Strada Costiera 11
34151 Trieste, Italy
Phone: +39 040 2240387
E-mail: prizes@twas.org

Bavaria-wide Africa initiative launched

A network of Bavarian universities was founded on 6 February 2014 to bundle their research activities in Africa and to develop, link and communicate them in public.

Bavarian Research Institute for African Studies (short BRIAS), the name of a new network which initially consists of the University of Bayreuth, the Julius Maximilian University of Würzburg, the Hochschule Neu-Ulm University of Applied Sciences, and the Ingolstadt University of Applied Sciences. These four institutions only mark the beginning, BRIAS explicitly welcomes further partners from the academic scene in Bavaria.

The initiating and leading role in the network is taken by the University of Bayreuth, which has already a study and research center for African Studies. Moreover, there is a well established interdisciplinary research on Africa-related subjects, in which all six faculties are incorporated, under the roof of Institute of African Studies.



Concentrated competence on Africa: university presidents together with the Minister of Education and Sciences. From left: speaker of BRIAS D. Ibrizimow (Bayreuth), President S. Leible (Bayreuth), President U. Feser (Neu-Ulm), Minister L. Spaenle, President A. Forchel (Würzburg), G. Bringmann (Würzburg), President W. Schober (Ingolstadt), and W. Zörner (Ingolstadt). (Photo: University of Bayreuth)

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Email: horst.beinlich@uni-wuerzburg.de

“Highly Commended Paper of 2013” award for Prof Daniel Makinde

“Effects of viscous dissipation and Newtonian heating on boundary layer flow of nanofluids over a flat plate”, by Professor Daniel Oluwole Makinde, published in International Journal of Numerical Methods for Heat & Fluid Flow has been selected by the journal’s Editorial Team as a Highly Commended Paper of 2013.

The International Journal of Numerical Methods for Heat & Fluid Flow Editorial Team were asked to nominate an Outstanding Paper and up to three Highly Commended Papers. “Effects of viscous dissipation and Newtonian heating on boundary layer flow of nanofluids over a flat plate” was chosen as a Highly Commended Paper winner as it was considered by the team as one of the most impressive pieces of work the team has seen throughout 2013.

The International Journal of Numerical Methods for Heat & Fluid Flow aims to increase dissemination of such quality article as much as possible and also promote the paper by making it freely available for one month.

The Highly Commended Paper award also means that The International Journal of Numerical Methods for Heat & Fluid Flow will promote Prof Makinde’s article via social media, marketing campaigns and at conferences.

The Highly Commended Paper award comes with a certificate which will be presented to Prof Daniel Makinde in person by The International Journal of Numerical Methods for Heat & Fluid Flow at an event to be announced later.

Prof Oluwole Daniel Makinde is a Fellow of the African Academy of Sciences and also a Senior Professor of Applied Mathematics & Computations. He is the Secretary General of African Mathematical Union. He is also the winner of the NSTF/NRF TW Kambule Senior Researcher award for 2009/2010 and the winner of AU-Kwame Nkrumah Continental Scientific Prize for 2011/2012.

“Sona Geometry from Angola: Mathematics of an African Tradition”

A colored version of the book, “Sona Geometry from Angola: Mathematics of an African Tradition,” ISTEg, Boane, 2014, 248 pp has been produced. This coloured version, over 500 illustrations in color, is in English language. Translation and Preface is by Professor Artur B. Powell, Rutgers University, Newark, USA.

The book is written by Prof Paulus Gerdes, a Fellow of the African Academy of Sciences; Vice-President for Southern Africa for the AAS. He is also the president, International Study group for Ethnomathematics; Former Chairman, African Mathematical Union Commission for the History of Mathematics in Africa (1986-2013); Former Rector / President, Pedagogical University, Mozambique (1989-1996); Senior Advisor for Research and Quality, ISTEg-University, Boane, Mozambique

The ‘sona’ tradition belongs to the culture of the Cokwe and related peoples in Eastern Angola and neighboring areas of Northwest Zambia and the Congo. Observers have described ‘sona’ as sand graphs, sand drawings, drawings in the sand, writing in the sand, pictographs and ideograms, and as a system of communication. The ‘sona’ tradition is multifaceted. It comprises aspects that are philosophical, educational, artistic, ideographic, and recreational. The book shows that mathematical considerations were involved and developed as the Cokwe invented ‘sona’ and built up a reservoir of symbolic-graphic expressions.

To obtain the paperback edition in color: <http://www.lulu.com/content/paperback-book/sona-geometry-fromangola-mathematics-of-an-african-tradition-%28coloredition%29/14484109>

The black-and-white edition, published in 2006 by Polimetria International Scientific Publisher (Monza, Italy) is still available too: <http://www.polimetria.com/wp/negozio/sona-geometry-from-angolamathematics-of-an-african-tradition-paulus-gerdes>

GYA launches Study on the State of Young Scientists

Career satisfaction for scientists and scholars requires more than state-of-the-art research equipment and full access to information and resources. This is just one of the findings of the Global Young Academy (GYA) in their study “The Global State of Young Scientists” (GloSYS). The report analyses enigmas in the career trajectories of today’s generation of young scientists.

The GloSYS project is the first study taking into account not only established science systems in Europe and America, but also comparing the status-quo with new and original findings on developing nations and world regions that receives little previous research attention.

Downloaded a copy: www.interacademies.net/File.aspx?id=23352

OPPORTUNITY



The African
Academy of Sciences

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Driving Scientific and
Technological Innovation
in Africa

FINANCE AND ADMINISTRATIVE ASSISTANT

The African Academy of Sciences (AAS) is a non-governmental, continent-wide, honorific, autonomous, and professional organization based in Karen, Nairobi, Kenya. AAS is looking for suitably qualified individual to fill the position of **Finance and Administrative Assistant** in its Headquarters in Nairobi, Kenya. Reporting to and under the overall supervision of the Programmes Officer, the Administrative Assistant shall support the timely, effective and efficient implementation of the programs of the Academy

Job Summary

Will be part of a team to support and facilitate range of administrative and logistical tasks Will liaise with program colleagues at the Secretariat for effective Programme management, developing and managing AAS's contacts with its Fellows and other Stakeholders and assist in revenue generation with development of proposals and submission to by funders and donors.

Primary Duties and Responsibilities include:

- Responsible for the day-to-day administration and routine operations of the Academy.
- Strengthen the secretariat's efficiency and effectiveness by providing direct support to the Programmes Team.
- Coordinate related administrative duties and make recommendations on procurement requirements of the Programme including logistical/travel arrangements, meetings or conferences.
- Performing general office/secretarial work such as designing and keying-in of documents relating to the Programmes activities or events.
- Compiling an accurate record of all workshop registration forms and/or attendance confirmation for participants attending the workshop and updating the Programme Officer and Executive Director accordingly.
- Making a list of all participants travel reservations to facilitate ease in airport transfers and assignment of accommodation facilities at the meeting venue.

Qualifications & Experience

A Bachelors degree from a recognized university in the fields of business, management or administration. Secretarial qualifications a necessity.

A minimum of **THREE** years experience with program and administrative support, demonstrated through previous work experience.

Key Skills & Competencies

- Proficiency in computer applications and financial and statistical packages.
- Fluency in written and spoken English. Demonstrated competence in French, Portuguese or Arabic will be an added advantage.
- Demonstrate commitment to delivering excellent administrative, financial and organizational service.
- Ability to draft routine correspondence and extract and prepare basic reports.
- Training and experience utilizing computers including Microsoft Word, Microsoft Excel.
- Ability to maintain accurate and precise records and stocks; Ability to recognize data discrepancies and bring these to the attention of supervisor and/or officer.
- Ability to draft routine correspondence and extract and prepare basic reports.
- Ability to contribute to preparation/compilation of documentation by providing support in producing basic charts and tables.
- Excellent interpersonal skills, courtesy and tact and be able to work patiently and effectively with people from diverse backgrounds.
- Ability to work under pressure and meet deadlines.

Remuneration

An attractive remuneration package commensurate with qualifications and experience will be offered.

Submission of Application

If your background, experience, competence match the qualifications, please send a cover letter and a detailed C.V and include your current remuneration, testimonials and give full contact details of 3 referees including day time telephone number(s) to:

**The Executive Director, African Academy of Sciences
P.O. Box 24916, Nairobi 00502, KENYA
Tel: +254 725 290 145**

Email: aas@aasciences.org

Deadline for Submission: 30 April 2014

NB:

**This position is restricted to persons residing in Kenya
Only Shortlisted Applicants will be contacted**