Science*Policy*Africa

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In this Issue:

- Prof Aderemi Kuku elected fourth President of AAS
- AAS holds 9th General Assembly
- Scientific Lectures delivered at the 9th General Assembly
- Science, Technology and Innovation for the post-2015 agenda - an African perspective
- Elsevier and AAS Work Together to Support Researchers through Publishing Training Program
- Setting the Stage: Post – 2015 Development Agenda: Challenges and the Role of Science and Partnerships

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. Views and opinions expressed in this newsletter are those of the authors and do not necessarily reflect the official policy or position of the AAS

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Prof Aderemi Kuku elected fourth President of AAS

Prof Aderemi Oluyomi Kuku has been elected the fourth president of the African Academy of Sciences. He was elected on the eve of the 9th General Assembly of AAS held in Brazzaville, Congo, 14-17 April, 2014.

Prof Aderemi Oluyomi Kuku

Professor Aderemi Kuku was born in Ijebu-Ode, Ogun State, Nigeria, on March 20, 1941. He obtained his B.Sc (Special Honours) Mathematics degree from the University of London in 1965; M.Sc (Mathematics) in 1968, Ph.D (Mathematics) 1971; both from the University of Ibadan, Nigeria with his Ph.D thesis written at Columbia University, New York, USA, under Professor Hyman Bass.

He had a long teaching/research career at the University of Ibadan, Nigeria where he became full Professor of Mathematics in 1982; Head, Mathematics Department, 1983-86; Dean, Postgraduate school, 1986-90; and Chairman, Committee of Deans of Postgraduate Schools in Nigerian Universities, 1986-90. He was Professor of mathematics at the International Centre for Theoretical Physics, (ICTP) (a United Nations Research Centre for Mathematics and physics) 1995-2003 and a William. W. S. Claytor Endowed Professor of Mathematics at the Grambling State University, Grambling Louisiana, USA. He has held many visiting positions at highly reputable Universities and Research Centres in the USA, Canada, Europe, Hong Kong, China, including: Member, Institute for Advanced Study, Princeton, NJ, USA; Visiting Research Professor, Mathematical Sciences Research Institute (MSRI), Berkeley, CA, USA); Visiting Professor, Cornell University; Ohio State University; Queen's University, Ontario, Canada; Universitat Bielefeld and Max-Planck Institut fur Mathematik, Bonn, both in Germany; University of Goteborg, Sweden; Institut des Hautes Etudes Scientifiques (IHES) Paris, France; University of Hong-Kong; Institute of Mathematics, Chinese Academy of Sciences, Beijing, China). He has given numerous invited colloquia/seminar lectures and organized numerous conferences/workshops/ symposia all over the world.

Professor Kuku is one of the world leaders in several aspects of K-theory and connections to commutative and non-commutative Algebra/Number theory/Geometry/Representation theory - a contemporary and multidisciplinary subject that also have applications in mathematical physics, Dynamical systems, Econometrics and Control theory. He has 85 publications made up of 52 research articles in highly reputable journals; 10 books/monographs and 23 articles on topical issues in mathematics, science, and technology.

Professor Kuku was President of the African Mathematical Union (AMU) for nine years 1986-95, Member of the International Mathematical Union Commission on Development and Exchange for eight years (1986-94), Vice Chairman , First Congress of African Scientists, Brazaville, 1987 and many more.

Professor Kuku is a recipient of several honours: He is a Fellow of the American Mathematical Society, 2012-; Fellow of The World Academy of Sciences (TWAS) (1989 -); European Academy of Arts, Science and Humanities (1986 -); African Academy of Sciences (AAS) (1986 -); Nigerian Academy of sciences (1989 -); Foreign fellow, Mongolian Academy of Sciences (2005 -); Honorary President (AMU) for life;(1995-); Fellow of the Mathematical association of Nigeria, (MAN) (1987-); Nigeria National Honours: OON (Officer of the Order of the Niger) 2008-; NNOM (Nigerian National Order of Merit) 2009; —the highest honour in Nigeria for academic excellence. An International conference on "Algebraic K-theory and its applications", March 17-21 2011, was organised by Nanjing University, China in honour of his 70th birthday, and a special issue of the Journal of K-theory, Volume 12, no 1, published by the Cambridge University Press, UK recently appeared as Proceedings of the conference.

EDITORIAL

"Communication is about what they hear, not what you say". This is a statement my Communication Skills lecturer made that I remember very well, and always. In her usual calm and relaxed tone, she gave this advice. It made great sense to me. I did take her advice but putting into practice that advice has not been as easy and simple as my teacher said it.

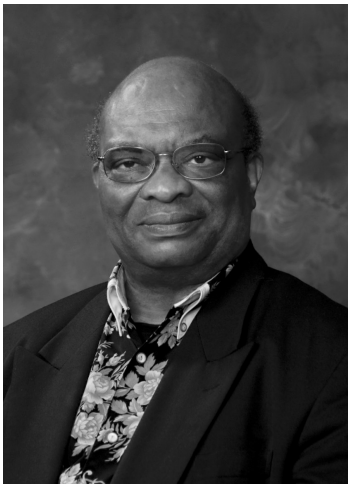
How do scientists communicate the work they do for everybody to understand? Is it even necessary to bother oneself with communicating the science they do to the everyday person who may not even be science-inclined?

How to effectively communicate science remains a big issue among many scientists. Scientists are interested in doing good quality science. But should they be even more interested in how the knowledge they develop/generate will be understood and eventually used by society? Is it necessary that at the beginning of any research/study, the scientist must think of how the work will be communicated?

Interdisciplinary and trans-disciplinary work is a good way of beginning to communicate the work scientists do. As much as possible and practical, the biologists, physicists, chemists, etc, must begin to work closely with the psychologists, political scientists, sociologists, and related fields on the communication dynamics surrounding issues in science, engineering, technology, medicine and so on. This will be a very positive move towards:

1. Improving understanding of relations between the scientific community and the public
2. Assessing the scientific basis for effective communication about science
3. Strengthening ties among and between communication scientists
4. Promoting greater integration of the disciplines and approaches pertaining to effective communication
5. Fostering an institutional commitment to evidence-based communication science

Message from the President



First of all, I like to express my gratitude to the Fellows of AAS for electing me as President and also for electing members of my team on the Governing Council (GC) with whom I will work assiduously for further progress of AAS in the next three years. I seize this opportunity to pay tribute to our former Presidents---Professors T. Odhiambo, M.H.A Hassan, A.L. Ndiaye - and former members of AAS GCs for nurturing the Academy to its present enviable position. They have all provided a solid foundation for us to build on. More recently, Professor Nidiaye and his team provided the most recent layers of building blocks for our beloved Academy culminating in the recent highly successful General Assembly at Brazavlle. We do appreciate their contributions and look forward to their co-operation and collaboration as our team continues the process of putting our own building blocks on top of theirs.

We are indeed proud of our new team of highly distinguished colleagues who will work together to move AAS forward in various positive directions. Our Management Committee (MC) meeting, (June 9-10, 2014), has paved the way for our GC meeting towards end of July. We have a very comprehensive agenda on various issues such as: Appraisal of AAS strategic plan in terms of what has been achieved and the way forward; activation of sub-regional offices and kick-starting of the affiliate membership programme; intensification of fund raising activities to improve the financial health of AAS; increasing the visibility of AAS through creation of Science commissions and programmes for popularization of Science; continuation of capacity building in various areas of STI research needed on the continent for sustainable development; nurturing and developing young scientific talents all over the continent; broadening the AAS fellowship base, and many more.

Our new GC will endeavour to strengthen existing partnerships and build new ones among: 1) Pan-African and sub-Regional Government Institutions - AU, AUC, NEPAD, AMCOST, Pan-African University, ECOWAS, SADC, ECCAS, Community of SAHEL, etc, 2) other International Organizations - SIDA, IDRC, UNESCO, NORAD, USAID, etc, 3) Other Academies - TWAS, Brazilian, South Korean, Indian, as well as other African national academies beyond the three with which AAS currently has MoUs namely Ghana, Ethiopia and Kenya; 4) Financial Institutions and the Private Sector - e.g. AfDB, World Bank.

AAS will continue to make excellence a major criteria for election of new Fellows while ensuring the election of more women, scientists from under-represented countries and those in under-represented disciplines. AAS in co-operation with TWAS and ***icipe*** will soon start the award of the Thomas R. Odhiambo prize while continuing the award of Olusegun Obasanjo prize every two years.

The new GC will intensify, in collaboration with our various partners, AAS capacity building in research efforts on Climate change, Food security, Water and Sanitation, sustainable Energy - solar, hydropower, wind, geothermal etc. Morever, our GC will continue the nurturing of the younger generation of scientists through training in some frontier fields and innovative new technologies – NanoSciences, Biotechnology, ICT, Cell and gene therapy, etc. The new GC will endeavor to find ways of improving basic sciences education. Indeed, University and tertiary education systems in Africa have witnessed unusual expansion resulting in expertise in basic sciences research and training being spread thin all over the continent. So, AAS will endeavor to organize capacity building programs in basic sciences—mathematics, physics, chemistry, biology.

In the direction of increasing the visibility of AAS all over the continent, it is envisaged that the new GC will create four AAS Commissions—On Science Education; On Pan-African Science Olympiad; On History of Science in Africa; and On Women in Science in Africa; as well as intensify AAS efforts towards popularization of Science through various methods including an AAS publication devoted to explaining important scientific results in simple language. Meanwhile, effort will be made to enhance the quality, distribution and circulation of existing publications –"Discovery and Innovation" and "Science*Policy*Africa". Efforts will be made to find a reputable commercial publisher for "Discovery and Innovation" to increase its global visibility, circulation, acceptability, and readership.

Finally, the new GC will work towards radically improving the financial strength of AAS through vigorous fund-raising efforts to get more contributions to the endowment fund from various sources including African Heads of States as well as renting out some of its unused facilities in the AAS premises etc.

It cannot be over-emphasized that it will be all hands on deck for us all as Fellows of AAS and we look forward to the collaboration and cooperation of all our colleagues and partners to enable us achieve our objectives enumerated above.

Prof Aderemi Oluyomi Kuku,
President, AAS

Building science teacher competence bit by bit

Science teachers are vital contributors to socio-economic development. Developing the competence of science teachers should, therefore, be a priority. In every country there is recognition of this common imperative but how best to achieve this remains debatable.

In South Africa, there is a shortage of science teachers. Furthermore, the shortage is worsening, because the number of new teachers entering the profession is consistently below the number leaving. There are several reasons why this situation pertains, but it is not the purpose of this article to present these. The key point is that it is very important to strengthen the competence of existing science teachers.

The RADMASTE Centre at the University of the Witwatersrand, Johannesburg, has as one of its principal activities to develop MST (math, science, technology) teachers and another is to develop teaching and learning resources. These two types of activity work in synergy, because new resources can be developed in response to needs revealed through teacher development activities.

Although this approach has been part of our philosophy for several years, the best way to apply it has been debatable for most of this time! In the last 5 years we seem to have found a preferred way that optimizes all the factors. This way is based upon the notion of Short Courses accredited by the University. These are flexible in terms of content and objectives and also in terms of duration. Nevertheless they have the common thread of rigour and academic control that one would expect of a respected university. Teachers who register for these short courses know they may not pass if they do not attend and do not pass the tests, assignments and exam. The Short Courses involve contact sessions amounting to 8 to 20 days, but it is intended that at least an equivalent amount of time is devoted to self-study. There is always a substantial course book prepared to support and extend their studies. The school textbooks are not used.

The Short Course topics are drawn from the current school curriculum for either primary or secondary schools. With the emphasis on competence rather than on educational theory, it is intended that teachers gain knowledge and skills that are of immediate benefit to their success-in and enjoyment-of classroom teaching. The contact sessions are therefore interactive (not lectures!), involve practical work (as required by the national curriculum), and involve no more than about 35 teachers with one facilitator. Teachers express anxiety, gratitude, amazement, despair as they participate in the sessions. Some do drop out, but the gratifying thing is that most hold out, struggle and succeed.

All these teachers have some sort of claim on paper to be "qualified", but most are working well beyond their actual competence. They experience much pain doing these Short Courses and yet they participate. Their participation does not require them to pay course fees, because the costs of the programme are borne by corporate donors or by government agency contracts. Clearly, they are motivated by the wish to do a better job and to enjoy it more through the self-confidence they acquire. Successful teachers are awarded a Wits Certificate of Competence tied to the specific topic covered by the Short Course. And like a school prize-giving ceremony there is much joy and excitement at the award ceremony.

The Short Courses avoid the time and commitment barrier represented by the one to two year part-time university programmes, which often have higher academic aims such as preparing candidates for post-graduate studies. They also avoid the transience of the impact of one day workshops which do not involve any assessment and require only ticking the attendance register. They are conducted both on the university campus and elsewhere (often far from our own campus). We do not use science laboratories because we use the microscience kits we have developed for classroom use. Teachers consistently comment that they need these kits for their teaching but government remains largely locked into traditional thinking.

Although to-date we have been able to award more than 1000 Certificates of Competence, there are many ideas for improving and extending the concept we have initiated.

Prof JD Bradley, RADMASTE Centre, Wits University, Johannesburg. Tel +27-11-717-3486. John.Bradley@wits.ac.za.
www.radmaste.org.za;
www.microsci.org.za

Grade 8 and 9 science teachers doing micro-scale experiment as part of their accredited short course

Receiving a certificate of competence in Grade 11 Physical Science

From the ED's Desk

The 9th GA is still fresh in my mind – and I wish to thank all the AAS Fellows that responded to our call and attended the General Assembly. I also take this opportunity for the words of encouragement expressed by a few of the AAS fellows and telling me that they were very pleased with the progress made by the Academy. There were also others who gave me 'pieces of their mind', who were not so happy with the actions I have taken and the decisions I have made. I have taken note, and will do my best to serve you better.

I welcome the new members of the Governing Council and look forward to working with each and every one of you. I also take this opportunity to bid farewell to those who left. The profile of our GC has changed for the better. The group contains more diverse specialties, younger members and very significantly, we have three women in the Council. I think this is a very nice profile excellent. Working with the old GC during the last three years had periods of ups and downs. Although we agreed on most things, we disagreed on some. I think this is normal. By and large, it was great working with you.

As we begin another term under a new Governing Council, I feel that AAS is poised to strategically position itself as a true pan-African organization. A few of them are: (1) The recently launched partnership with the Association of Commonwealth Universities (ACU) to jointly implement the Climate Impact Research Capacity and Leadership Enhancement (CIRCLE) program which is also intended to strengthen AAS systems for setting and implementing research programs based on credible commissioning and peer-review processes. We, already, are getting support to improve our capacity in Finance and Administration; (2) the developing relations with the African Union Commission in general and NEPAD in particular. It will be recalled that of a Working Group comprising representatives from the African Academy of Sciences (AAS), African Union Commission, NEPAD Agency, African Development Bank, ICSU, UNECA and UNESCO was set up to review the CPA after five years of its implementation. AAS was engaged in this effort only minimally. With the increased visibility that AAS now has, the interest from NEPAD as well as the AUC is also increasing. These bodies now see clearly how a seal of approval from a professional pan-African body can give greater recognition and legitimacy to these organizations; (3) we are getting into the second year of implementation of the Strategic Plan 2013-2018. We are very pleased with the increasing number of partner organizations who are collaborating with us in its implementation. Of particular note is the Stem Cell Research and Regenerative Medicine project which falls under the Health area of the Strategic Plan. We are currently implementing an aspect of this project which aims at establishing mentoring relationships between young African health professionals and experts in the field from Brazil, China, India and South Africa. IAP, TWAS, INSA, and CAS are actively collaborating with AAS and I am optimistic that this will go a long way in addressing the career development needs of our young professionals.

Finally, I want to point out that this is the second issue of Science-Policy-Africa. This publication is the News and Information magazine of the Academy. Please do not think that it is ONLY a science policy publication. It is meant to contain any aspect of Science, or Policy, or combination thereof that is relevant to Africa. So, I hope those of you who did not know this but had materials that you would like to publish in the magazine, please send them to the Editor.

Prof Berhanu Abegaz
Executive Director, AAS

AAS holds 9th General Assembly

Prof Lamine Ndiaye speaking at the opening of the 9th GA of AAS

Opening:
The African Academy of Sciences held its 9th General Assembly (GA) in Brazzaville, Congo, from 14 to 17 April 2014. This was made possible by the generosity of the government of Congo lead by His Excellency President Denis Sassou N'guesso. The 9th General Assembly of AAS was held as part of the Africa Science Week.

The joint official opening of the of the AAS 9th General Assembly and the Africa Science Week was attended by the Minister of Scientific Research and Technological Innovation of the Congo as well as other distinguished dignitaries from the Science, Technology and Innovation sectors all over the country. At the opening, Prof. Lamine Ndiaye, the outgoing president of AAS thanked the Government of the Republic of Congo for their kindness in hosting the GA.

Prof. Ndiaye informed AAS Fellows and guests at the opening that in view of efforts made by President Sassou N'guesso and the Republic of Congo towards promoting Science and Technology on the continent, the Governing Council (GC) of AAS at its 29th meeting unanimously elected H.E. Denis Sassou N'guesso, President of the Republic of Congo, as Honorary Fellow of the AAS. Prof. Ndiaye encouraged President N'guesso to continue promoting STI in Africa.

Mrs. Ana Elisa Santana Afinso, Director of the UNESCO office in Brazzaville, said UNESCO recognizes the contribution made by AAS towards science and recounted the AAS long-standing collaboration with UNESCO in promoting Science and Technology in Africa and bridging the gap between higher education and research sciences.

Prof. Bruno Jean-Richard Itoua, the Minister of Scientific Research and Technological Innovation for Congo, underlined the importance of each of the activities taking place during the Africa Science, and the willingness of President of Congo to promote Science, Technology and Innovation (STI) on the African Continent. Prof. Itoua thanked AAS for recognising H.E. Denis Sassou N'guesso's efforts with honorary fellowship. In the Minster's opinion, AAS should be integrated as part of the institutional network to govern STI on the continent. Young people should be encouraged and mentored towards STI, and as the youth form the bigger percentage of the population, they will take the lead in the development of the continent. Technology helps to eradicate poverty and STI should be embraced in development plans and form part of policy decisions, the Honourable Minister added. The minister concluded the opening ceremony by reiterating that Africa should develop a scientific culture through education and training.

AAS 9th General Assembly Meeting:
Prof. Ndiaye welcomed all Fellows to the 9th General Assembly meeting and briefed Fellows of the discussions with the government of the Republic of Congo that culminated in a decision by the President of Congo to hold several scientific events during a week themed "Africa Science Technology and Innovation Week". Activities for the week included the AAS 9th General Assembly, the sub-regional workshop of Pan African Congress for Ethics and Bioethics (COPAB) and the 5th Session of the African Ministerial Conference on Science and Technology (AMCOST).

Report of the last 3 years:
Report on AAS was presented by the Executive Director on behalf of the Secretary General, Dr. Shem Arungu-Olende, who could not be in Brazzaville. It was reported that in 2012 a new constitution was adopted - defining the mandate of AAS, after which a Strategic Plan for 2013 - 2018 was developed. Some of the key points in the strategic plan are widening the fellowship base to have full Africa -wide representation, increasing the number of women fellows and increasing the number of members in under -represented countries. Fellows were also informed that publication of annual reports has resumed, detailing activities of AAS in line with the strategic plan.

One of the notable changes since 2011 has been the increasing recognition of AAS. In November 2012, AMCOST recognized the work done by AAS and urged the African Union Commission to work closely with AAS. The President and Executive Director of AAS held discussions with the AUC commissioner in this regard in June 2013. AAS is no longer an observer but a strategic partner of the AUC. AAS is also a member of the Pan African University Council. AAS assists in running the Kwame Nkrumah Continental Prize and has been mandated by the Republic of Congo to run the Denis Sassou N'guesso Innovation Prize.

New elected officers for AAS:
The chair of the AAS elections committee, Prof Paulus Gerdes, presented the electioneering process of AAS in choosing its new officers which for the first time was online based. He presented the names of the newly elected Governing Council of AAS for 2014 - 2017. In a brief remark by the president-elect, Prof Kuku, he expressed his gratitude for the confidence reposed in him to lead the academy. He also expressed gratitude to the Government of the Republic of Congo for hosting the AAS General Assembly and added that he had been one of the organizers of the First Science Congress held in Brazzaville in 1987 and attending the 9th GA was like a home coming for him. He urged all Fellows to heed the words of Prof. Ndiaye and work as a team. He noted the outgoing GC had provided a good starting point and the new GC would build on it and asked that as many Fellows as possible should be involved in the activities of AAS. Their expertise and resources were required.

Setting up Expert Committees
The Executive Director reiterated Prof. Kuku's request to have all Fellows involved in the academy's activities. He referred members to the thematic areas outlined in the current Strategic Plan and corresponding log frame. The secretariat required the help of Fellows in implementing the activities, establishing what competencies are required to implement the activities and outlining the tasks to be undertaken. Expert Committees would guide the secretariat on groups to be constituted and activities to be implemented. These committees may meet once or twice a year. Fellows were requested to send their comments regarding setting up Expert Committees to the Executive Director who would then forward them to the new AAS President.

Views from AAS Fellows:
AAS fellows at the 9th GA were generally satisfied with the new momentum that the academy has gathered and expressed their desire to help sustain it and move the academy to greater height. Below are some of the comments made by Fellows at the meeting:

- The GA is should be a good forum for networking between senior and younger scientists and would make the younger scientists interested in AAS
- The AAS estate in Karen could be developed into an advanced center for science where scientists can conduct research
- AAS should play a central role in leading the science agenda for Africa. AAS should therefore consider the work done by its Fellows in advancing science in Africa
- AAS should consider more avenues of publicizing the activities f the academy
- AAs should engage Presidents of countries and universities to promote science
- Few fellows are involved in AAS activities.
- Fellows should form not just a network of academics but of intellectuals who are committed to changing society
- AAS should revive its journal, DISCOVERY AND INNOVATION.
- AAS Fellows should also enhance the visibility of AAS by making their research work more visible
- Regional Representatives should enhance the visibility of AAS at national levels in the various regions they represent
- Fellows should assist AAS in fundraising, finding research projects as well as approaching organisations for research grants and research programs for AAS
- AAS should consider linkages with the EU-Pan Africa Programme

Prof. Abdul-Hakim R. Elwaer, the Director of Human Resources, Science and Technology at the African Union Commission assured AAS Fellows that the AU would give AAS political impact so that it has a stronger presence in Africa. The relationship between AU and the AAS would be strengthened. The AU needs to collaborate with AAS to help implement AU's science oriented programs, he added. The AAS had been given a key role to support the process in the African Scientific Research and Innovation Council.

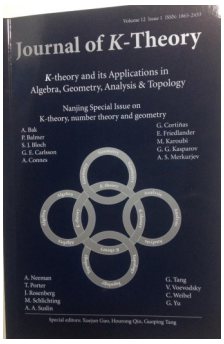
Olusegun Obasanjo Prize for scientific discovery and/or technological innovation:
The presentation of the above named Prize was held on the last day of the GA. It was a very colorful event which was well attended by Congo government officials and dignitaries. Prof Viness Pillay was presented with his award which included a gold medal.

The evening also saw the launch of the Denis Sassou N'guesso Prize for Innovation in Africa.

Prof Pillay receives the 2013 Olusegun Obasanjo prize for Scientific Discovery and/or Technological Innovation

NEWS

Special Issue of the Journal of K-theory in honour of Prof Kuku



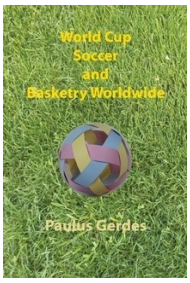
The proceedings of an International Conference on 'Algebraic K-theory and its Applications' organized by Nanjing University, Nanjing, China, March 17-21, 2011 in honour of the 70th birthday of Prof Aderemi Kuku has been published by the Cambridge University Press, UK.

The proceedings is published in Volume 12, No 1, (2013) of the Journal of K-theory -(K-theory and Its Applications to Algebra, Geometry, Analysis, and Topology), Cambridge University Press, UK,

"World Cup Soccer and Basketry Worldwide"

The English language edition of "**World Cup Soccer and Basketry Worldwide**" has been published by Professor Paulus Gerdes. This is a book for children and youth on geometry. "World Cup Soccer and Basketry Worldwide", (ISTEG-University, Boane, 2014, 76 pp., in colour), was originally published in Portuguese.

Both the printed and the eBook edition are distributed internationally by Lulu (www.lulu.com/spotlight/pgerdes). The eBook edition may be downloaded for free at http://www.lulu.com/content/e-book/world-cup-soccer-and-basketry-worldwide/14630891



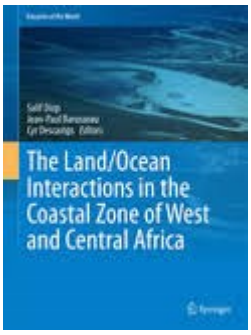
"World Cup Soccer and Basketry Worldwide" talks about a passion that people share all over the world, from Brazil and Mozambique to Ghana, Nigeria, Great Britain and the USA. This passion is soccer. In the book, one we will discover the geometry of the soccer ball. But first, there will be analysis of the geometry of some baskets starting with baskets from Brazil and Mozambique.

Here is the link to the book: http://www.lulu.com/content/paperback-book/world-cup-soccer-and-basketry-worldwide/14629955

New Book Published
THE LAND/OCEAN INTERACTIONS IN THE COASTAL ZONE OF WEST AND CENTRAL AFRICA

Diop, Salif, **Barusseau,** Jean-Paul, **Descamps**, Cyr (Eds.), 2014, XXII, 210 p.

This is an excellent and very valuable volume in the Estuaries of the World (EOTW) book series.

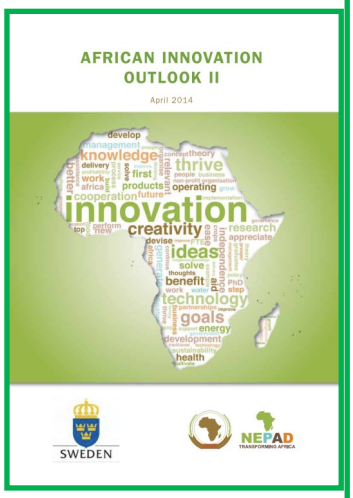


Visit the e-book version on Springerlink e-platform at http://link.springer.com/book/10.1007%2F978-3-319-06388-1

Prof Salif Diop is a Fellow of AAS and Former Head, Ecosystems Section Scientific Assessment Branch - Division of Early Warning and Assessment (DEWA) - United Nations Environment Programme. E-Mail: sal-fatd@orange.sn

Africa Innovation Outlook II

The NEPAD African Science, Technology and Innovation Indicators (ASTII) Initiative originated from the first African Ministerial Council on Science and Technology (AMCOST) meeting in Johannesburg, 2003 which resolved to "Develop and adopt common sets of indicators to benchmark our national and regional systems of innovation".



Countries participating in the second edition of the African Innovation Outlook (AIO II) increased from 19 to 35 between 2011 and 2013. The report presents the results of the R&D and innovation surveys and bibliometric studies as well as information on the status of STI policies and/or strategies of each country.

The report concludes that African countries are willing to develop their national systems of innovation (NSIs), to develop indicators to monitor and benchmark themselves with one another and to move with the world towards knowledge based economies.

A copy of this report is available at http://www.nepad.org/system/files/AIO_2_Final%20Product[2].pdf

Prof Calestous Juma - Harvard Kennedy School

Calestous Juma, professor of the practice of international development at Harvard Kennedy School (HKS) and director of the Belfer Center's Science, Technology, and Globalization project, will have a dual role during the 2014-15 academic year. Juma has been appointed faculty chair of the Edward S. Mason Program at HKS and Dr. Martin Luther King Visiting Professor at the Massachusetts Institute of Technology's Department of Urban Studies and Planning.

As faculty chair of the Mason Program—HKS's flagship international program—Juma will work with around 90 leaders from developing, newly industrialized, and transitional economy countries for a one-year master's degree program designed to prepare them to address the world's most compelling development challenges.

At MIT, Juma will conduct research and advance MIT's work in the area of science, technology, and sustainable development. He also will teach freshman and doctoral seminars on innovation, entrepreneurship, and development, based on his forthcoming book on the topic.

Juma is internationally recognized for his work on science and technology in sustainable development. A former executive secretary of the UN Convention on Biological Diversity and director of the African Centre for Technology Studies (Nairobi), Juma also directs HKS's Agricultural Innovation in Africa Project, funded by the Bill and Melinda Gates Foundation. He is on the jury of the £1 million Queen Elizabeth Prize for Engineering and the Africa Prize for Engineering Innovation.

The Radcliffe Institute for Advanced Study Fellowships

The Radcliffe Institute for Advanced Study at Harvard University awards approximately 50 fully funded fellowships each year. Radcliffe Institute fellowships are designed to support scholars, scientists, artists and writers of exceptional promise and demonstrated accomplishment, who wish to pursue work in academic and professional fields and in the creative arts. Applicants must have received their doctorate or appropriate terminal degree by December 2013 in the area of the proposed project.

The stipend amount is $75,000. Fellows receive office space and access to libraries and other resources of Harvard University. During the fellowship year, which extends from early September 2015 through May 31, 2016, residence in the Boston area is required as is participation in the Institute community. Fellows are expected to present their work-in-progress and to attend other fellows' events.

Applications in Creative Arts and Humanities and Social Sciences must be submitted by October 1, 2014. Applications in Natural Sciences and Mathematics must be submitted by November 1, 2014. For more information, visit our Web site at www.radcliffe.harvard.edu.

Radcliffe Institute Fellowship Program
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Scientific Lectures delivered at the 9th General Assembly of AAS, Brazzaville, Congo, April 2014

Envisioning the end of AIDS: Challenges and Prospects

Salim Abdool Karim
CAPRISA - Centre for the AIDS Programme of Research in South Africa

Abstract:
The decline in the number of new HIV infections over the past decade has created a unique opportunity for the global community to harness the prevailing impetus to envision "The End of AIDS". Unprecedented international political commitment, resource mobilisation, and civil society engagement have combined to effectively implement AIDS programmes and services using evidence-based technologies and approaches. Complacency could rapidly reverse this trend. Further, new HIV infections continue to occur at unacceptably high levels in many areas, including among key populations characterised by their marginalisation and vulnerability in society. However, mathematical models demonstrate that combinations of available interventions have the potential to reduce HIV incidence to a level that it no longer represents a public health threat. Ending AIDS will not be an easy task and will require much more than political commitment or biomedical tools. A more detailed understanding of HIV transmission at a local level needs to be combined with renewed effort to address ongoing HIV transmission. Concerted action at the local level will need to learn from past failures, build on local and global successes in implementing effective interventions to scale. Effective implementation will need reinvigorated effort to address law reform, gender inequalities, gender-based violence, stigma and discrimination, and strengthen health systems and programmes. At the same time, scientific innovation, including research for an effective HIV vaccine and cure, needs to be bolstered. Now more than ever, the global AIDS response cannot afford to lose its momentum. With greater global effort, "The End of AIDS" is within our grasp.

African history as a source of inspiration for the discovery of new mathematical ideas

Paulus Gerdes
ISTEG-University, Boane, Mozambique.

Abstract
Throughout history, African peoples have conceived diverse, fruitful mathematical ideas. A rich variety of geometries, frequently interwoven with artistic, symbolic, educational, architectonic, and other cultural manifestations, has been developed. The 'sona' drawings in the sand of the Cokwe in Angola and the 'mpango' mat decorations of the Makwe in Mozambique are two examples of such geometric traditions. The presenter will explain briefly how the analysis and reconstruction of geometric considerations in these and related traditions led to the invention of new mathematical concepts, like mirror patterns, mirror curves, Lunda-designs, Liki-designs and various types of matrices – in particular, cycle matrices with attractive visual properties – and to the exploration of these ideas. This line of research contributes to an understanding, awareness, and appreciation of the scientific potential of these and other African traditions and practices – so often repressed in the colonial past, so often underestimated in the present. These traditions and practices become a source of inspiration for future, scientific development.

Science for Social purpose: A new agenda for new time

Ameenah Gurib-Fakim
Centre for Phytotherapy Research (CEPHYR), Ebene, Mauritius

Abstract
The African continent is increasingly being cited as the world's fastest growing continent with a collective GDP as well as combined spending that are likely to double by 2020. Faced with the tyranny of its history, the continent still faces numerous challenges including global ones like climate change, endemic poverty and hunger in some countries, as well as pandemics like HIV-AIDS and malaria amongst others.
The African continent is blessed not only with vast amount of mineral wealth and has a young workforce equipped with improved education and having access to the latest technology. With many African countries fast urbanizing, Science will be the driver for sustained economic development. Africans will be called upon to become activists in generating ideas, spurring research and mobilizing its indigenous resources for socially relevant development purposes in this increasingly connected world.

K-theory, Representation Theory and Classifications of Various Mathematical Objects and Structures

Aderemi Kuku
Grambling State University, LA 71245, USA

Abstact
The talk starts with a preamble of general information on K-theory— intuitive definitions and special features of K-theory including the fact the theory maps to or coincide with other interesting well known mathematical theories. Next we emphasize some original aims of K-theory, namely to classify various mathematical objects and structures. .We provide examples of such classifications of some Algebraic, Geometric, Topological, and Analytical objects and structures. And more generally the classifications of 'equivalence' classes of objects of various 'nice' categories C,.. We next note that representations of various groups G could be considered as actions of *G* on such 'nice' categories giving rise to the category C_G of *G*-representations in *C* otherwise known as a *G*-equivariant category, on which one can do *K*-theory. The initial motivation for this approach to representation theory is due to the fact that when C = P(C) is the category of finite dimensional vector spaces over the field C of complex numbers, G a finite of compact Lie Group, the Grothendieck group K_o (P (C)G) coincides with the Abelian group of generalized characters of *G*. As such, the study of *K*-theory of such equivariant categories belongs to the theory of group representations and are aptly described as Equivariant *K*-theory. We next identify such 'nice' categories C as examples of "exact categories" which we next define in the talk as well as introduce equivariant exact categories with examples relevant for the theory of algebraic groups on which our illustrations are focused. Finally, for an algebraic group *G* over a field *F*, we present constructions and computations of equivariant higher *K*-groups

Scientific Lectures delivered at the 9th General Assembly of AAS, Brazzaville, Congo, April 2014

Geopolymers: Materials for Africa's future

Mouhamadou Bassir Diop
Earth Sciences Institute, Dakar, Senegal

Abstract

The making of durable alkali-activated aluminosilicate brick can be accomplished on a small or industrial scale according to the needs of the community. Brick made with this technology can be obtained in a few hours using a pressurized vessel and elevated curing temperatures (≥ 100°C) or after three to four weeks if the brick is cured under a tarp or in a solar heated enclosure in areas where energy is unavailable. The process is less expensive than conventional kiln firing of brick, because the development of strength vis à vis sintering is a result of a chemical reaction that takes place at a relatively low temperature. Starting materials available in Senegal consist of highly leached aluminosilicate soils (laterites) and tuffs that primarily contain kaolin, and/or or certain by-product materials now considered to be industrial waste (e.g. aluminum refining sludge). The dry ingredients are mixed with just enough concentrated caustic solution to form a thick paste, compacted in a mold, and allowed to cure. Caustic can consist of sodium hydroxide mixed with sodium silicate and water/seawater. The bricks produced in this fashion are durable and relatively inexpensive to make, thus the technology should appeal to those living in villages in less industrialized nations such as Senegal, because the technology uses locally available materials and solar heating that are available almost everywhere.

Chemoecological-based tools for the control of vector-borne diseases in Africa

Baldwyn Torto
International Centre of Insect Physiology and Ecology (*icipe*), Nairobi, Kenya

Abstract

Vector-borne diseases have been major causes of morbidity and mortality throughout human history mainly afflicting resource-poor communities. For example, malaria accounts for the most deaths by far of any human vector-borne disease, especially, in sub-Saharan Africa (SSA) with global estimates documenting about 219 million cases in 2010 and an estimated death toll of 1.24 million. Though substantial gains have been made in reducing malaria transmission, the death toll from this disease still remains unacceptably high mainly due to challenges associated with the present tools used in the fight against the different targets of the disease: 1) **vector control**- poor bednet coverage, development of insecticide-resistant mosquitoes to long-lasting insecticide-treated nets (LLINs) and indoor residual sprays (IRS), and insensitivity of these tools to outdoor biting mosquito fractions; 2) **chemotherapy**-emergence of resistant strains of the *Plasmodium* parasite to artemisinin; 3) **vaccine development**- complexity of the parasite and its life cycle, extensive antigenic variation, and a poor understanding of the interaction between *Plasmodium falciparum* and the human immune system. Another vector-borne disease of major concern is Rift Valley fever (RVF), a mosquito-borne viral disease which affects livestock and humans. Since the 1930s, thousands of infections have been reported in Africa and the Middle East with increasing frequency in East Africa, in the last two decades affecting mainly marginalized poor pastoralist communities. For example, the 1997/98 and 2006/07 RVF outbreaks in Kenya resulted in 1,136 human infections and loss of 300 lives, and economic losses of about US $ 9 M in the 2006/07 outbreak alone. Present tools for control of the disease focus on surveillance to monitor circulation of the virus for early warning and response in the absence of an effective vaccine or therapeutic treatment against the disease. Like malaria, the current tools are faced with a host of challenges: 1) **serological surveillance in animals/humans-** i) humans- only passive; ii) sentinel animals- can be affected by cross-reactivity among arbovirus groups; reduced sensitivity due to the development of herd immunity; ethical issues associated with using animals; challenges of bleeding larger animals which represents an occupational health and safety issue; 2) **mosquito-based surveillance**- the lack of improved tools to monitor mosquito vector populations and infections especially during the inter-epidemic period (IEP) associated with low virus activity, vector density and sporadic transmission foci. The presentation will highlight the tools that are being championed by *icipe* as alternatives in the fight against these two diseases based on an understanding of the biology, behaviour and chemical ecology of the mosquito vectors involved in Africa.

Innovation of African-Led Game-Changing Drug Delivery Technologies

Viness Pillay
Department of Pharmacy and Pharmacology, University of the Witwatersrand, South Africa

Abstract

The mission of the Wits Advanced Drug Delivery Platform (WADDP) is to assist in promoting African-led pharmaceutical product innovation in order to address the treatment of burdensome diseases that compromise public healthcare. The Platform forms a strong backbone for coordinated collaboration, supports pan-African institutional technology transfer in drug delivery technology and disseminates new knowledge in the field through collaborations with African scientists and expansion beyond the continent. The idea is to design drug delivery technologies and build research networks that support socio-economic development that can alleviate public health drug therapy burdens. Research in this field is extremely fertile in the Developed World and has led to the production of many lucrative pharmaceutical products. The improvement of the drug efficacy currently available for treating and preventing many diseases poses a significant challenge. Formulations are plagued by stability, bioavailability and/or dosage form related problems. Since the Developing World is worst affected by most infectious diseases, the highest economic burden is placed on nations that can ill-afford it. The research of the WADDP is focused on innovating pharmaceutical products for diseases that disproportionately affect Africa and lead to devastating public health burdens as well as hereditary and lifestyle diseases that are prevalent globally. Examples of some of the seminal prototypes produced by the WADDP includes the design of the RapiDiss Wafer Technology for superior anti-retroviral (ARV) therapy in paediatric HIV/AIDS, intraocular devices to prevent blindness in HIV/AIDS-related infectious uveitis, *in silico* PEIGOR-based drug delivery prototypes, nanoVectors as monoclonal antibody-type insertable targeting devices for AIDS Dementia Complex, ovarian and cervical cancers as well as microbicides, nano-colloidal scaffolds for the repair of Spinal Cord Injury and the design of oral bioavailability boosters for enhanced absorption of new and existing ARV and anti-TB drugs. Innovative pharmaceutical product technologies is a key value-adding intervention that is able to significantly mitigate the scourge of public health dilemmas pertaining to the drug treatment of infectious diseases in the Developing World by providing superior and more affordable patient-friendly treatment options for alleviating such diseases of poverty. The WADDP currently has a wide technology platform with over 35 patents filed and currently under prosecution in South Africa, USA, UK, Europe and Japan with several key patents already granted in the USA, Japan and South Africa. The WADDP has also become a reference point for drug delivery research in Africa and a training center for pharmaceutical scientists on the continent with over R100 million worth of state-of-the-art equipment and research infrastructure.

Pictures of Induction of New AAS Fellows, 2014

Prof Berhanu ABEGAZ, Ethiopia, inducted into AAS Fellowship

Prof Aggrey AMBALI, Malawi, inducted into AAS Fellowship

Prof Ameena GURIB-FAKIM, Mauritius, inducted into AAS Fellowship

Dr Baldwin TORTO, Ghana, inducted into AAS Fellowship

Prof Richard T. AWUAH, Ghana, inducted into AAS Fellowship

Prof Peace Chinedum BABALOLA, Nigeria, inducted into AAS Fellowship

Prof Mouhamadou Bassir DIOP, Senegal, inducted into AAS Fellowship

Prof James DARKWA, Ghana, inducted into AAS Fellowship

Prof Balkiss BOUHAOUALA-ZAHAR, Tunisia, inducted into AAS Fellowship

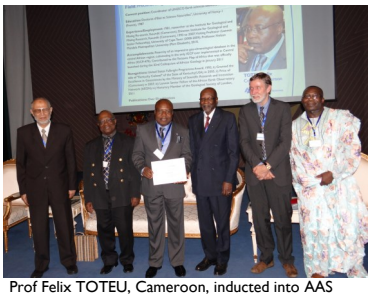
Prof Kevin C URAMA, Nigeria, inducted into AAS Fellowship

Prof Ambaliou SANNI, Benin, inducted into AAS Fellowship

Prof Dominic W. MAKAWITI, Kenya, inducted into AAS Fellowship

Prof Viness PILLAY, South Africa, inducted into AAS Fellowship

Prof Theonest K MUTABI NGWA, Tanzania, inducted into AAS Fellowship


Prof Felix TOTEU, Cameroon, inducted into AAS Fellowship

Prof Barthelemy NYASSE, Cameroon, inducted into AAS Fellowship

Prof Daniel Oluwole MAKINDE, Nigeria, inducted into AAS Fellowship

Prof Mammo MUCHIE, Ethiopia, inducted into AAS Fellowship

Prof Maurice TCHUENTE, Cameroon, inducted into AAS Fellowship

Prof Godwin Osakpemwoya Samuel EKHAGUERE, Nigeria, inducted into AAS Fellowship

Prof Nelson TORTO, Botswana, inducted into AAS Fellowship

Prof Bonaventure T. NGADJUI, Cameroon, inducted into AAS Fellowship

Prof Frederick A. O. OTIENO, Kenya, inducted into AAS Fellowship

Prof Salim ABDOOL-KARIM, South Africa, inducted into AAS Fellowship

Prof Timothy U. OBI, Nigeria, inducted into AAS Fellowship

Prof Francisca Nneka OKEKE, Nigeria, inducted into AAS Fellowship

Prof Boitumelo KGAREBE, Botswana, inducted into AAS Fellowship

Group Picture of New Fellows of AAS inducted in Brazzaville, Congo

Summaries from the 29th meeting of the Governing Council and the 9th General Assembly of AAS, 14-17 April 2014, Brazzaville, Congo

The African Academy of Sciences expresses its appreciation to the people and government of the Republic of the Congo, particularly to President H.E. Denis Sassou N'guesso for the generous hospitality which allowed the Academy to hold its 29th Governing Council meeting and 9th General Assembly in Brazzaville.

The Governing Council unanimously approved the submission made by three members of the Management Committee to extend Honorary Fellowship to H.E. Denis Sassou N'guesso, the President of the Republic of the Congo. This was subsequently presented to the General Assembly and was fully endorsed by the Fellows of the Academy

The then out-going President of the Academy, Professor Ahmadou Lamine Ndiaye proposed that President Sassou N'guesso be designated by the Academy to be their ambassador of Science, Technology and Innovation (ST&I) for the development of Africa. This was widely acclaimed in a plenary by the Fellows of the Academy. AAS recommends further that the African Union recognize him as a champion for Science in Africa.

The Fellows of the Academy participated in the launch of the Denis Sassou N'guesso African Innovation Award and the designation of the African Academy of Sciences as the manager of the award. AAS accepts this responsibility and pledges to undertake the implementation of the award with the highest level of integrity and professionalism.

The Fellows of the Academy witnessed the award of the African Academy of Sciences' 2nd Olusegun Obasanjo Prize to Professor Viness Pillay and greatly appreciated the honor accorded to the ceremony by the august presence of the Minister of State, the Honorable Isidore Mvouba, Ministry of Industry and the development of the Private Sector, and the honorable Minister of Scientific Research and Technological Innovation Bruno Jean Richard Itoua, and other important government officials of Congo, UN representatives, ambassadors and NGO representatives.

The Fellows appreciated the diversity and quality of the scientific presentations made by selected Fellows of the Academy and urges that more of such talks be presented, documented and distributed as widely as possible.

The Academy appreciated the roundtable panel discussion which brought into sharp focus the need to promote effective cooperation between African academies and governments in order to provide think-tank support and evidence-based advice to policy makers. AAS can play a big role to work together with governments to bring about science-led, technology and innovation-driven development of the continent.

AAS recognized the developing relations between the Academy and the pan–African political and financial institutions particularly the AU and AfDB. It is recommended that concrete steps be taken to formalize institutional arrangements with these institutions. Furthermore AAS intends to establish four regional offices (in Central, Western, Southern and Northern Africa) by contacting the various countries where the offices will be established and the regional economic communities.

AAS also held a meeting of the outgoing and incoming members of its Governing Council. This meeting instructed the AAS Secretariat to issue a communique to inform all member states of the African Union, ministers of Science, Technology and Higher Education (and others) of the elected President and his team as the new leaders of the Academy.

Newly– elected Officers of AAS, 2014 - 2017

President
Prof Aderemi Kuku

Secretary General
Prof Georges-Ivo Ekosse

Treasurer
Dr Thomas M Kariuki

Vice President
Central Africa
Prof Vincent P. K. Titanji

Vice President
Western Africa
Prof Robert Guiguemde

Vice President
Eastern Africa
Prof Burton L. Mwamila

Vice President
Southern Africa
Prof Quarraisha Abdool Karim

Vice President
Northern Africa
Prof Mahmoud M. Abdel-Aty

Regional Representative
Central Africa
Prof Silou Thomas

Regional Representative
Western Africa
Prof Richard T Awuah

Regional Representative
Eastern Africa
Prof Ameenah Gurib-Fakim

Regional Representative
Southern Africa
Prof Boitumelo Kgarebe

Regional Representative
Northern Africa
Prof Thameur M. Chaibi

Tobacco Use in Africa Highlighted

The Network of African Science Academies (NASAC) in collaboration with eight African academies, including the Academy of Science of South Africa (ASSAf), and a 16-member committee of experts produced a report on tobacco use in Africa.

The report entitled "***Preventing a Tobacco Epidemic in Africa: A Call for Effective Action to Support Health, Social and Economic Development***" summarises the findings and makes critical recommendations about tobacco-use prevention and control.

Tobacco is estimated to kill up to one of every two users with no other risk factor carrying such a high mortality rate and costs more than half a trillion dollars in economic damages annually. As the use of tobacco has declined in high-income countries, the tobacco industry has increasingly turned to low and middle-income countries, particularly in Africa, Asia, and Eastern Europe, to recruit new users. Without comprehensive tobacco prevention and control policies, it is estimated that smoking prevalence in the African region will increase by nearly 39 percent by 2030, from 15.8 percent in 2010 to 21.9 percent – the largest expected regional increase globally. Increasing prevalence, combined with sustained economic growth and changing population dynamics, could drive tobacco consumption in Africa to double within the next ten years with devastating effects on health, development efforts, and economic growth in African countries.

The report recommended that in order to reduce the current and future health impacts of tobacco use, African governments should provide human and financial resources for tobacco prevention and control programmes. Governments should consider adopting innovative models that have been successful in other countries and should also encourage external development partners to support their plans. Legislative platforms should augment these efforts.

The report concludes that it will take focused, coordinated, and collective African and global action to save Africa from a scourge that can be prevented.

By:

Patricia Scholtz, Communication Manager, Academy of Science of South Africa (ASSAf). Email: patsy@assaf.org.za

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About the Academy of Science of South Africa (ASSAf)

The Academy of Science of South Africa (ASSAf) is the official national academy of science and represents the country in the international community of science academies. The Academy aims to generate evidence-based solutions to national problems.

The strategic priorities of the Academy are closely matched to those of the nation, focusing particularly on the need for the greatly enhanced availability of high-level human capital and an increased use of the country's best intellectual expertise in generating evidence-based policy advice that is practical and feasible.

Elsevier and AAS Work Together to Support Researchers through Publishing Training Program

Elsevier, a world-leading provider of scientific, technical and medical information products and services, today announced it is working together with the African Academy of Sciences (AAS), an Africa-wide scientific organization that aims to encourage the development of research and technology throughout Africa, on a joint initiative to support African researchers' drive for quality research output.

With 233 active Fellows from 36 countries across the African continent, the AAS has the goal to help African researchers enhance their academic profiles and research productivity. Elsevier and the AAS first came together in corporation hosting the conference "Open Access in Africa" held in Nairobi, Kenya in April 2013, and their collaboration has since continued.

As part of this new joint initiative Elsevier will undertake to provide AAS members with access to a host of research capacity building services including:

Access to the Elsevier Publishing Connect training module information. Topics include: Introduction to Scholarly Publishing; How to get your research published in high impact journals; Research & Publication Ethics; Successful Grant Writing; How to review a manuscript, and more.

Support for AAS to host live, online webinars to their network of researchers across Africa in skills such as those mentioned above. This webinar program can bring AAS members in direct contact with Elsevier publishers and editors to hear and learn from their expertise.

Both of the above initiatives aim to help the AAS deliver a wider program to their researcher network, support the growth in publishing skills across institutes in Africa and critically, drive for continued increase in quality research output.

Throughout this year the AAS plans to make the content of these services available to its members through direct correspondence, its website, workshops and conferences.

"By working with Elsevier on this initiative we hope our Fellows and Affiliate members will more easily be able to enhance the international scope and visibility of their academic professions," said Professor Berhanu Abegaz, Executive Director, African Academy of Sciences.

Hannah Foreman, Elsevier's Head of Researcher Relations and Program Manager for Publishing Connect said, "By opening up access to this educational content we support the outstanding but vital work of organizations like AAS to further develop the knowledge and experience of their top researchers, preparing them for a career in international publishing success."

This initiative is part of Elsevier's continued commitment to enable the education, development and enhancement of African research output and quality. It complements many of the additional activities supported across the African continent, including among others: Elsevier Foundation's Innovative Libraries in Developing Countries program and Research4Life, a free and low cost access initiative to provide researchers, doctors, nurses and policymakers with the information they need to boost research output and improve evidence based treatment and policies.

About the Elsevier Publishing Connect Program

Publishing Connect is Elsevier's early career researcher capacity building workshop program. Last year more than 300 complementary workshops were hosted at institutions and conferences around the world to more than 30,000 early career researchers. Some workshops are also available online: www.elsevier.com/training webcasts

Water use conflicts in East Africa: Lessons Learnt from International DAAD Alumni Expert Seminars on Integrated Water Resources Management within Tsavo River Catchment

[1]Ali A.; [2]Okeyo B.; [3]Tewodros T.; [1]Handa C.; [4]Wanzala W; [5]Gerd F; [5]Rugger W; [6]Jane, N., and [7]Neema M.

Background

The growing demand for food, water and energy of a rapidly expanding population is resulting in steady ecosystem degradation, exerting increasing pressure on water resources in East Africa. The region is also confronted with inadequate water and land use management practices, intensive arable and livestock farming, inappropriate irrigation systems from springs and rivers, increased settlements and land grabbing practices. In order to ameliorate these challenges, the Deutscher Akademischer Austausch Dienst (DAAD) designed an integrated water resources management (IWRM) initiative with a goal of enhancing catchment protection options. This is to be achieved through empowered stakeholders, community participation and development of catchment management strategy. The initiative brought international water experts of DAAD mainly drawn from eastern Africa member countries of Kenya, Uganda, Tanzania, Ethiopia and German. The group strategically picked on Tsavo sub-catchment because of its rich and unique ecosystems heritage and increasing threats facing it.

Tsavo national park is located in the coastal region of Kenya and it's made up of two separate parks; the Tsavo East and Tsavo West. Tsavo East is one of the oldest parks in the country, near the Town of Voi in the Taita-Taveta County, inland from the Coast; it is 13,747 sq.km while the Tsavo West National Park covers an area of 9,065 sq.km. The salient of the larger Tsavo East is dry plains across which the Galana River flows, the Yatta Plateau and Lugard Falls while Tsavo West is more mountainous and wetter, with swamps, Lake Jipe and the famous Mzima Springs. It is known for bird life and for its large mammal's e.g. black rhino, Cape buffalo, elephant, leopard, hippo and Masai lion. The Tsavo River is located in the Tsavo West National Park and it runs east from the western end of it, near the border of Tanzania, until it joins with the Athi River, forming the Galana River near the center of the park. This river is home to abundant fish species. The greatest amount of river flow is contributed by runoff and the springs of Rombo, Nol Turesh, Njukini, Sainte, Olpusare and Kimana draining from the southern part of Mt Kilimanjaro slopes and the Mzima and Kitani springs in Tsavo West National Park.

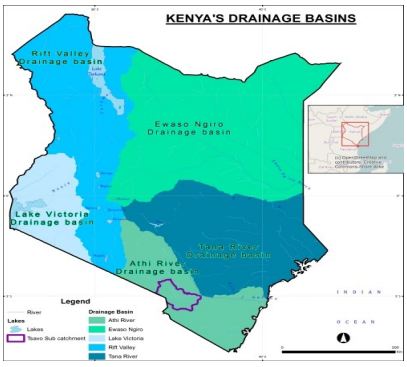

Figure 1: Six major drainage basins in Kenya

Objectives

The goal of the international water experts of DAAD seminars is to enhance Tsavo river sub-catchment protection through empowered stakeholders, community participation and development of catchment management strategy. The specific objective the seminar included: -Assessing the threats facing water resources and their management within the Tsavo River sub-catchment, analyzing opportunities for restoration of the degraded resources, mapping the relationship between major water stakeholders, and developing key recommendations for stakeholders to take action on the rehabilitation of the Tsavo sub-catchment.

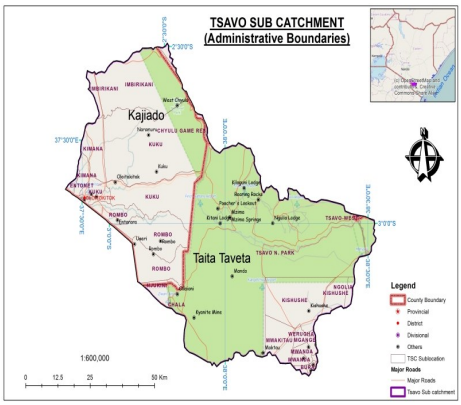

Figure 2: Administrative boundaries of Tsavo Sub-Catchment

Methodology

Twenty DAAD Alumni and nine stakeholders divided themselves into five groups and conducted three-day rapid assessment surveys in the upper and lower catchment. Face-to-face interviews, observations and photographs were used to collect data along transect walks. These surveys were conducted to identify all the water-related problems in the Tsavo river catchment area, mainly relating upstream uses with downstream impacts. Through discussions the groups came with practical, measurable and cost effective, locally acceptable approaches that address the main challenges facing the sub-catchment area. The total water demand was estimated from the quantities used by households, institutions, businesses, livestock and wildlife, inland fisheries, farms and external consumers. The main stakeholders involved in water use and management within the Tsavo river sub-catchment were identified and their relationships and levels of co-operation were mapped. The results of the stakeholder mapping were then integrated into an action plan matrix.

Findings/ results

The field study revealed that in the upper part, almost all abstractions are unlicensed. Even the licensed ones are not quantified on a regular basis to conform to the legal status (Abstracting not more than 67% according to WRMA rules). Water is abstracted both by canals and pumps and the springs are directly tapped as well as river sources. For instance on one source of Kimana River, in a stretch of 1.5km, 23 pumps are used to abstract water. This is despite the presence of Ilkisonko WRUA, which operates in the region. The sub-regional WRMA office at Loitoktok does not sufficient capacity in terms of personnel and transport to cater for all these needs. Similarly, there exist many diversion canals, some with permits and others without. However, none of the canals is metered and therefore, it is not possible to estimate the amount of water abstracted hence making it difficult to control downstream flow. On the other hand, there exists huge water export from the Tsavo sub-catchment to Machakos from Nol Turesh river (10,000m3/day) and Mombasa from Mzima Springs (40,000 m3/day). Due to poor land use practices in the Tsavo sub-catchment the area is experiencing frequent episodes of flash floods especially in the last 3 years, water pollution and water use conflicts.

In the Tsavo river sub-catchment, a lot of riverbanks and springs have been degraded. This is due to disregard, impunity or lack of demarcation of riparian land in the sub-catchment. Wetlands have also been converted into farmlands, an example is Kimana wetland and Mamoda ,Kisererenyi, Mwambole and Ndile Springs. The consequences of this include riverbank erosion, reduced infiltration rates and loss of retention capacity resulting into reduced groundwater recharge and increasing surface runoff (as flash floods after heavy rains).

All relevant stakeholders for water resources management in the Tsavo River Catchment were mapped in relation to each other, while key issues affecting the sustainable management of the catchment were identified.

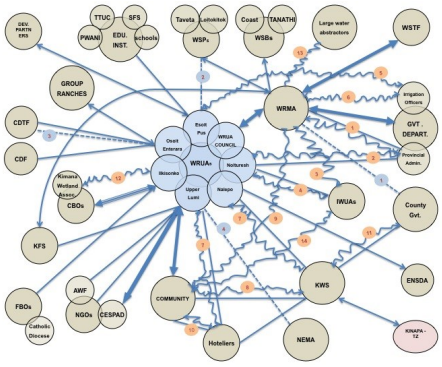

Figure 3: Stakeholder and Conflict Mapping Kilimanjaro Area
*Beige circles- stakeholders, blue circles-WRUAs; red numbers-conflicts, blue- weak relations

Recommendations

We recommend that sub-catchment stakeholder forum bringing all actors and water consumers together be formed to address the sub-catchment problems and rehabilitate degraded land. Additionally, abstraction of water needs to be legalized through metering and permit issuing. It is also recommended to form a Tsavo River Sub-catchment Task Force to facilitate a meeting, coordinate water activities and monitor actions by stakeholders in order to achieve the rehabilitation of the catchment and improving water resources management practice for the benefit of all. The development of a hydrological water balance model for the drainage basin is highly recommended, since it may serve with appropriate scenario modeling for the basis of joint and lasting water management solutions.

1 - National Museums of Kenya; 2 - Pwani University; 3 - GIZ Water Sector, Zambia; 4 - South Eastern Kenya University; 5 - University of Siegen, Germany; 6 - GIZ-Uganda; 7 - University of Dar es Salam

SCIENCE, TECHNOLOGY, AND INNOVATION FOR THE POST-2015 AGENDA -- AN AFRICAN PERSPECTIVE

Prof Aderemi Kuku, President, African Academy of Sciences

NTRODUCTION:

The aim of this short presentation is to look at African perspective in the context of STI post-2015 agenda. It is well known that one main objective of UNCTAD is to assist developing countries, especially the least developed ones (many of which are in Africa) to integrate beneficially into the global economy through various methods including technical assistance, supporting intergovernmental consensus building, increased access to sustainable use of ICT, training and capacity building.

The post-2015 agenda emphasizes inclusive and sustainable development including such crucial issues as health, renewable energy, agriculture, food security, advanced manufacturing, and urbanization and STEM education and research. While the global economy was estimated in 2013 to have a growth rate of 2.1% ,and is expected to grow at the rate of 3.0% in 2014, and 3.3% in 2015, IMF reported that around 2010, six of the fastest growing economies in the world are in Africa—Angola 11.1%, Rwanda, Chad, Ethiopia, Mozambique and Nigeria (between 7.6% and 8.9%). By now Nigeria is known to be the fastest growing economy in Africa. So there is some hope for pockets of countries in Africa in terms of economic growth.

Nevertheless, Africa faces many daunting challenges –poverty, health, population growth and urbanization, teats of climate change, food security, nutrition challenges, water and sanitation, STEM education and research. etc etc. it is therefore very good news that UNCTAD post -2015 agenda is focusing on some of these challenges.

THE AFRICAN PERSPECTIVE

i) SUSTAINABLE AGRICULTURE AND FOOD SECURITY:

Agriculture is the cultivation of animals, plants, fungi and other life forms for food, fibre and other products used to sustain life (ILO 19990.) Out of the developing world's 5.5 billion people, 2.6 billion live in households involved in Agriculture and 1.5 billion live in other households (World Bank 2007). It is only in Sub-Saharan Africa and South East Asia that the proportion of people living in rural areas is still more than 50%. Agriculture plays a big role in world economy and hence in African economy. Food security is concerned with the challenge of food accessibility and availability and the challenge is increasing with increasing urban population. STI methods have been playing big roles in tackling these challenges and lowering costs to the population in developed countries. But many countries in Africa have farmers who are poor because they their methods of production, harvesting, storage , and marketing are rather traditional. So, there will be need as part of the 2015 agenda to help Africa focus more on the use of STI methods in food production, storage,extension services, marketing.

ii) HEALTH:

In Africa, health is seriously underfunded. There is high child and infant mortality rate.

Abject poverty and malnutrition also results in poor health. There is need also to intensify research in some areas that in order not to lag too much behind the developed countries e.g stem cell research , cancer research, malaria, Aids etc. There are pockets of these happening on the continent but capacity building in these and other areas have to be intensified. UNCTAD and other International Organizations can help in various ways including capacity building.

iii) RENEWABLE ENERGY:

It is well known that the industrialized world have been relying for its existence on fossil fuel that are also responsible for a lot of land, water, air pollution beyond the CO2emissions resulting in climate change. It is also well know that there are now concerted efforts to invest in renewable energy resources e.g. solar, wind that are clean and will not run out. Africa must join in the global effort to use these renewable energies and will need help of the international community for capacity building to get a critical mass of researchers in this field as well as transfer the technologies.

iv) CLIMATE CHANGE:

In Africa, Climate change has many negative consequences---health—thermal stress leading to cardio-vascular and respiratory diseases; food availability, extreme weather conditions like floods and drought e t c .There are pockets of research Centres and conferences and training progrmmes devoted to this field in Africa but there is more need for capacity building to get a critical mass of specialists as well as influence Government and private sector to invest in these clean energies.

v) ADVANCED MANUFACTURING:

This involves the use of science and technology for the manufacturing of products or producing technologically complex products using high-tech design skills. An advanced manufacturing technology is a computer-controlled or micro-electronics-based equipment used in the design or manufacture a product. Again, Africa is yet to fully conversant with this process and so, there will be need for technology transfer and a lot of capacity building to get a critical mass of specialists as well as get African countries to fully embrace and cultivate the culture of advanced manufacturing.

vi) INFORMATION TELECOMMUNICATIONS TECHNOLOGY (ICT):

In Africa, there has been tremendous growth in access to the internet and mobile penetration. Africa has an estimated 63% mobile penetration and 16% internet access rate. Moble broadband penetration increased from 2% in 2010 to 11% in 2013. However Africa south of the Sahara still has the lowest internet and mobile penetration rate. Africa still lags behind in the more recent developments of wireless technologies and wireless broad bands .There is also need for ECA, UNCTAD, etc in co-operation with the African Union Commission to continue to implement the Tunis Agenda for the information society.

vii) URBANIZATION:

It is well known that most African cities have large slums and hence poor infrastructural facilities---poor drainage, inadequate water supply, transportation and waste management problems. Yet, there continues to be a general drift from rural areas to the poorly equipped urban areas. Such drifts result in over-crowding, homelessness, and extreme pressure on the meagre facilities. The Governments in the African countries involved together with UNCTAD and other international organizations should encourage STI methods to solve these problems.

viii) SCIENCE, TECHNOLOGY, EMGINEERING, MATHEMATICS, INNOVATION (STEM+Innovation):

In today's interdependent world, Africa cannot afford to isolate itself by neglecting basic research efforts. Countries in Africa have now critical mass in many areas of mathematics science and technology, and so they should be encouraged to embrace ALL necessary STI research that will contribute to their rapid development.

ROLE OF THE AFRICAN ACADEMY OF SCIENCES: (AAS) - ABOUT AAS.

AAS, founded in 1985 is a honorific, autonomous , Africa-wide non-political, organization that recognizes Africa's achievers in Science , Technology and other fields. It has so far recognized 280 fellows from 36 African countries. The goal of AAS include the strengthening of Science and Technology capacity on the continent, stimulating and nurturing the spirit of scientific discovery and technological innovation in Africa in order to promote sustainable development, to promote public awareness and understanding of science and technology as well as the development of science culture in Africa. For more information see www.aasciences.org.

SOME CONFERENCES, WORKSHOPS recently ORGANIZED BY AAS RELEVANT TO THE GENEVA MEETING

1) (with TWAS) Capacity Building in Cell biology and Regenerative Medicine. November 11, 2013
2) (with TWAS) Three workshops on African Perspectives on Solar Geoengineering ,Senegal June 2012, South Africa November 2012, and Ethiopia, January 2013.

AAS AND OTHER COLLABORATING ORGANIZATIONS

1) TWAS—The World Academy of Sciences.
2) NEPAD—New Partnership for Africa's Development
3) AUC—Africa Union Commission
4) DFID –(Department of International Development, UK) 5) CIRCLE—Climate Impact Research Capacity and Leadership.
5) IFS –International Foundation for Science
6) IOCD—International Organization for chemical Sciences for Development.

EDITOR'S NOTE:

This is a summary of a presentation made by the AAS President at the 17th session of the UN Commission on Science and Technology for Development in Geneva, Switzerland.

Setting the Stage: Post – 2015 Development Agenda: Challenges and the Role of Science and Partnerships

Berhanu Abegaz, African Academy of Sciences

In post-2015, how do we *enhance collaboration between the development aid and the global environmental change communities to achieve development goals in Africa*? This is a question that must engage the minds of development partners, researchers and policy makers as we enter the post-MDG era and start mapping out a new path for cooperation to improve the livelihoods of million the world over. There are several facets of the question and for this article, I have chosen to concentrate on exploring new partnerships and mechanisms for supporting integrated trans-disciplinary research and capacity building activities in the world and specifically, the Africa region.

Many African countries have, during the last decade, experienced not only economic growth, but also scientific as well. Over 20 countries have, also at least technically, crossed the line to be referred to as Middle Income Countries (MICs). It is interesting that when many countries in the high income countries were in recession, African countries were showing economic growth. African countries are also on increasing urban population. Besides those with established wealth of natural resources (Angola, Botswana, Congo, DRC, Gabon, Nigeria, Namibia, Sudan, etc.) a number of African countries have, during the last decade reported the discovery of many kinds of natural resources (oil and gas, minerals, and so on). Many African countries are also enjoying relative stability (although there are trouble hot spots as well – Southern Sudan, Darfur, parts of Congo, CAR, etc.,). Many African countries have also taken concrete steps to develop their infrastructure. Member states are undergoing major transformation, building roads, railways, expanding ports or building new ones. This is, in part, due to the fact that many of our leaders are no more generals, colonels, and majors; quite a few African presidents now are relatively well educated, energy experts, water engineers, medical doctors, etc. This is not to say that there are no concerns on governance matters; there is rampant corruption in many of our countries. Three of the most corrupt countries in the world are in Africa. **African development challenges for a sustainable development must therefore be seen against such background**.

I would like to bring four priority issues that I think are important for the future sustainable development of the African continent. These are:

Doing a major audit of the capacity developing establishments (Higher educational and research establishments) to ensure that they are producing the **specialized knowledge and skills needed for the continents development**. Sustainable capacity building is a long-term intervention. Africa needs to develop strong universities that are able to generate trans-disciplinary knowledge in such areas as water and sanitation, adaptation to and mitigation of the effects of climate change, sustainable energy, food security and nutritional wellbeing, etc. The African Academy of Sciences (AAS) has, in collaboration with the Association of Commonwealth Universities (ACU) and drawing on a major funding support from DFID, recently launched the Climate Impact Research Capacity and Leadership Enhancement (CIRCLE) program which will provide ca 100 research fellowship in trans-disciplinary fields. This will largely be an intra-African collaboration engaging early career African scholars and various home and host institutions in the continent.

Developing intra-African cooperation. Recent studies have demonstrated that the scientific output of many African countries are showing significant growth. But this cooperation is grossly deficient in intra-African component. This presenter has witnessed excellent research collaboration between African and North scientists resulting in papers published in high impact factor journals. One would undoubtedly concede the importance of such collaboration, but argues that a real measure of capacity building for the African collaborators must take into consideration an appreciation of researches and publications where the Africans are leaders and not followers. Indeed he believes that a real measure of success must demand seeing the emergence of African leaders, especially in Africa-specific and niche areas of research. One of the challenges of achieving the MDGs has been the synergy-lacking individual efforts of nations on fields of activities which clearly have cross border dimensions. It is for this reason that the presenter argues for Africa based researchers who are global leaders and who can promote trans-national collaboration in Africa.

The challenge of poverty in numbers, data and information. Sustainable development can only be driven through investments in science, technology and innovation. Such development planning requires the availability of reliable data in order to establish priorities, develop policies and establish implementation strategies. Only a very small number of countries (e.g South Africa, Tunisia, etc.) have reasonable data on STI indicators. But by and large there is paucity of such information for much of the continent. AU-NEPAD's initiative to establish the African Science, Technology and Innovation Indicators (ASTII) and the major initiatives that should be supported and fully developed. AAS is known to have rosters of African experts and scientific institutions, which are being converted into living databases. AAS also notes with interest the establishments of various national academies in the continent (ca 20 of them to date) and is in the process of creating collaborative arrangements to work with them. Academies have major roles in creating and using such data resources to conduct review and foresight studies and give evidence-based advise to policy making organs of member states, regional bodies (like the RECs) and the pan-African bodies like the AU.

Inspiring and stimulating African youth: Africa is the most youthful continent with more than 50% of its population under 25 years of Age. The youth may be an invaluable asset if provided quality education and given employment in an enabling environment. It is the future work force can be relied on to extricate itself out of poverty and emerge as a significant player to the global production of science, technology and innovation (STI). It is estimated that by 2040 Africa will have the largest and the youngest global workforce. There are a few initiatives that are targeted to inspire and stimulate the youth. More are needed. This presenter would like to mention a few prizes and awards that are intended to recognize Africa's most brilliant innovators and inventors. AAS, which is already involved in a few continental prizes, welcomes these developments as a way of promoting the creativity of Africans.

IFS Ghana Alumni Association holds its maiden meeting

IFS Ghana Alumni on the 2nd April 2014 held their maiden Alumni meeting and discussed the possible strategies of creating a sustainable forum for networking among different generations of IFS past, present and potential IFS grantees in the country.

The meeting was held at the conference room of the Council for Scientific and Industrial Research (CSIR)–Science and Technology Policy Research Institute (STEPRI) hosted by Dr George O. Essegbey, the current Director of CSIR-STEPRI.

The Deputy Minister of the Ministry of Science Technology and Innovation (MESTI), Dr. Mosheibu Mohammed-Alfa graced the meeting with his unannounced visit. The Minister commended IFS for the great work done in supporting young and energetic scientists to help solve some of the pressing issues in the country.

The meeting represented the second attempt at starting the Ghanaian IFS Alumni Association. This time members resolved to make it work since news from other countries highlighted the benefits that the Alumni Association was bringing to those countries, especially, regarding the quality of proposals submitted to IFS for funding and the number of awards made to such countries.

There were discussions about possible activities for the association. Some of the activities tabled were awareness creation about IFS in Ghanaian academic and research institutions, proposal writing workshops, pre-screening of proposals before submission to IFS, peer review of scientific articles for members among others.

The following executives were elected to streamline the activities of the association:

- President: Dr Edward Yeboah - Soil Fertility Specialist, Senior Research Scientist, CSIR-Soil Research Institute.
- Secretary: Mr Isaac Osei-Bonsu - Agronomist/ Physiologist, Research Scientist, Horticulture Division, CSIR-Crops Research Institute.
- Treasurer: Dr Christopher Antwi - Animal Scientist &Lecturer, Department of Animal Science, Kwame Nkrumah University of Science and Technology (KNUST)-

Dr Nighisty Ghezae, IFS Head of Programmes, was there to represent IFS Sweden at the meeting. At the end of the meeting, she was very impressed with the progress of the association and pledged her full support for the Association.

The IFS Ghana Alumni Association is among the three (3) new IFS Alumni Associations being formed to add to the six (6) IFS Alumni Associations already working actively to increase the presence and impact of IFS in Africa.

"Masters of our Destiny"

opening statements of AfDB president, Donald Kaberuka, at the AfDB 2014 Annual Meeting, Kigali, Rwanda

AfDB president, Donald Kaberuka

Your Excellencies, Heads of State and Government, Governors, Eminent Persons, Ladies and Gentlemen, Good morning and thank you for honoring us with your presence.

A very warm welcome to Kigali, the Land of a thousand hills, and to the AGM. This is a great day. Thank you, President Paul Kagame, Your Government and the People of Rwanda for inviting us, for the hospitality, for such fine arrangements, and for making us feel so very welcome. I know how much effort has gone into making this event a success, the first time in fifty years that the **AGM** takes place in this country.

I speak for everyone here in expressing our very deep appreciation. That we have so many Leaders, today at a time of our Golden Jubilee, is truly gratifying. We are very much conscious of the competing demands on your time, and hence why, your presence, today is more than courtesy, it is a symbol. To the many distinguished personalities here today; Retired former Leaders, Chairperson of AU Commission, Executive Secretary of ECA, Heads of RECs, My distinguished predecessors, Heads of Global, Continental and Regional Organisations, Leaders of Rwanda's institutions and Ministers of the Rwanda Government, Members of the Diplomatic corps, Captains of industry and civil society here today, Thank you all for your friendship.

Mr. President, that we are here, today, so many, is not a coincidence. Twenty years ago, here in Rwanda, a million people were exterminated. In only three months, the fastest massacre in recent history. Innocent men, women, babies, were eliminated in cold blood, with unprecedented brutality, simply because of their circumstances of birth. That chapter, one of Africa s darkest, will forever mark the history of this continent. Last month the international community, came together, in Rwanda, united in commemoration. I was here representing the Bank and its members. Like many of you here today, in the light of events in South Sudan, the Central African Republic, we must sometimes wonder, though, whether lessons have been fully learnt.

In the aftermath of this ignominious chapter, Rwanda was written off as on the way to a failed state. Indeed, from all angles, the situation looked desperate. And yet here we are today, the cross-section of the whole world of finance and beyond. A recognition of how far this nation has come. We pay homage to you, Mr. President, and your Government, the People of Rwanda for your accomplishments, your resilience and tenacity in healing a wounded nation. The story of this country's journey of reconstruction is one yet to be written. But there are lessons, here, very relevant to many African countries, facing challenges of reconstruction. I can immediately think of two:

First, it does not matter how bad the initial conditions, a determined people can prevail against even the most impossible of all odds. I know that many friends of Rwanda, in Africa and abroad, individually and collectively have made a contribution. We pay homage to them all, individually and collectively. That said, it is only fair to add that nothing would have been possible without the People of Rwanda themselves doing the heavy lifting.

Second, while there are manuals on how to put up the most complex structure, there is no such a toolbox as to how a destroyed nation is rebuilt. People have to look to their culture, their history, the nature of the crisis they face and come up with their own solutions. This is what is happening here in Rwanda. I know Rwanda has a long way to go. There are many challenges. But those solutions that are often difficult and counterintuitive are working. I hope, Mr. President, you will agree that the AfDB, through our different interventions, over the years, has been a reliable partner in this journey. Only last week, our Board approved a sector budget package of 76 million dollars, to promote skills and help deal with unemployment. We remain a committed friend in this quest for reconstruction and transformation of Rwanda, of this Region and Africa at large. I referred a while ago to South Sudan, Central African Republic. I applaud the AU and Regional Organisations for what they are doing to find ways, to overcome the crisis and pick up the pieces. We, ourselves, had opened up offices in Bangui and Juba and were already at work to help these two countries overcome the many obstacles they face. For now, we have had to close and evacuate our staff, but we remain fully committed once security is restored.

Your Excellencies, Ladies and Gentlemen, we all share a sense of revulsion at what is going on in that corner of North Eastern of Nigeria and the ramifications. Our hearts and minds go to the People, in the State of Borno. To that school in Chibok. To those innocent girls abducted as they prepared for their exams, and now in captivity for more than a month. I know I speak for you all to say to the captors, the kidnappers of those innocent girls and those who support them: None of the faiths known to humanity would condone that ghastly action. You are fighting a lost cause and you will not succeed. As Africa's leading Development Finance Institution, we hold very dear the right for girls to go to school, alongside their brothers. It is at the heart of the demographic dividend. We are at the disposal of the Nigerian Government as to what support we can provide. In that same vein, we vehemently condemn, the violence and terrorist groups bent on interrupting our economic takeoff, spreading mayhem in Nigeria, in Kenya, the Sahel and the Horn. To all those groups we say, give the people of Africa a break. Whatever you claim to fight for, you are fighting a losing battle.

Your Excellencies, Dear Governors, Friends,

In Marrakech last May, we discussed at length the state of the African economy, in the global context; We asked the question: What it would take to sustain the current positive trajectory; To take the next step, from economic growth to economic transformation, to create jobs for our young people. All issues were outlined in our **Ten Year Strategy**. Infrastructure and logistics, and in particular power, The value chains, Integration, Natural resource husbandry and the need to avoid premature Dutch disease, Private Sector, etc. I recall, in particular, the focus on ensuring equity, social justice and social mobility. That policy of inclusion, "leaving no one behind", is not only right, socially, politically, but an economic imperative, to expand Africa's growing consumer power. I know these are issues on which all of us agree. Our expectations this week, therefore, is not that we discuss the same issues all over.

Nowadays there are far too many events on Africa, about Africa, that end up saying the same things. We know what is needed, we know what has to be done. The fundamental question we could address this week is that of the rather large gap between diagnosis and problem-solving. Sometimes even when there are low-hanging fruits. Let me give you an example of one such low-hanging fruit: The free movement of Africans on their continent, to do business. Is it really normal that foreigners can circulate more freely in Africa than Africans? The recent experience here in East Africa is quite revealing: Governments of the East African Region have taken bold moves on free circulation, eliminating the need for passports, national IDs are sufficient. I understand they will shortly have common visas. Already here in Rwanda, African nationals can enter and exit freely, and the experience is all the way positive. The fears – of criminals, security threats, and massive waves of migrants – those often turn out to be paper fears, easily manageable by cooperation and technology. In the name of the participants here, I salute that decisive step. That is why I joined President Kenyatta and President Kagame, Aliko Dangote, Prime Minister of Mali at the last WEF in Abuja to sign a petition for visa simplification to make it easier for Africans to circulate on their continent. I look forward to that day, the day of an African passport. This is not a sentimental issue of our Africanness; it is about deepening Africa's domestic market, which is the indispensable platform for stronger economic growth and prosperity. That is how we build resilience to external shocks. We have reason to pat ourselves on the back, on many issues, where progress has been made. The reality though, is that time is not always on our side. Some windows of opportunities open for a brief period of time.

Your Excellencies, Ladies and Gentlemen, in 2009, the global economy came to a "near death experience". Although, it is now out of intensive care, repairing the damage of 2009 will take time. It is true much of Africa has been and remains resilient. Much of Sub-Saharan Africa will grow at above 6%, investments flows are up. In fact FDI is now inching close to 80 billion dollars. While structural problems persist, our continent continues to defy pessimists tempted to write premature obituaries. But, Africa cannot be an island.

Decoupling is not possible in today's world. There are many things we should do towards not simply growth, but transformation to consolidate our achievements, to minimize our vulnerability to exogenous shocks. Fundamental to all this: is macroeconomic discipline. We must continue to rebuild buffers against external shocks, against unforeseen events. Of late we have seen a succession of weakening currencies, growing fiscal and current account deficits, creeping debt, weaker commodity prices, effects of tapering and slower growth in large emerging markets, have raised concerns. Concerns regarding macroeconomic stability in the medium term. We must always recall that macroeconomic stability came at such a high price. The painful reforms during the years of structural adjustment. The so-called decade of sweat and tears. One such area is debt management. Let us always remember the three iron laws on debt:

- Borrow carefully,
- Invest wisely, and
- Build debt management capacity.

That said, at this stage, there is no cause for alarm, only areas requiring careful attention.

I, in fact, think once the GDP rebasing is done, as many countries are doing, some of those metrics may look different. Attention to more than macroeconomic issues, is also urgent in North Africa.

As the three affected countries (Libya, Egypt and Tunisia) continue to navigate the transitions, the economic situation has gotten tougher. The economic dislocations much deeper. Libya's oil production which used to be around 1.3 million barrels a day is now down to between 25,0000 and 30,0000 barrels. Tunisia and Egypt, historically two major borrowers from the Bank, though stabilizing somewhat, have suffered successive downgrading in credit ratings making it difficult for them to access capital.

Of even greater concern is that, the downgrading of both countries ratings, limits those countries to have access even to our own funding. Due to the prudential limits, we cannot lend more funds until the ratings of those countries improve, which I hope will come soon.

Continue on page 15

"Masters of our Destiny"

opening statements of AfDB president, Donald Kaberuka, at the AfDB 2014 Annual Meeting, Kigali, Rwanda

Continued from page 14

We have had to limit our exposures. I am fully confident these two countries will bounce back soon, for they are fundamentally promising, strong economies with a good track record. Meantime, at the request of the G8 Finance Ministers, we are working on an innovative solution together with other IFIs, whose outline we will share with you today, which if successful might offer a solution to reopen lending by the IFIs to North Africa.

Your Excellencies, Friends, Governors, Ladies and Gentlemen. In 1964, the founding fathers laid the foundation for the creation of the African Development Bank. This year, 2014, we celebrate the Golden Jubilee. It is a moment to look back into the mirror, the last fifty years, the road we have travelled. But above all to project into the future for the mountains we must still climb. In 1964, the founding fathers had a dream. That dream was born, at a moment of high hopes, aspirations, optimism for our continent. There followed a period marked by cycles of changing fortunes.
Political instability and economic decline. Times of optimism, times of discouragement, even moments of despair. New terms were even coined: Afropessimism, the lost decades. However the important thing is, irrespective of setbacks, those early hopes and aspirations never died. Men and women of goodwill ensured the dream never died. Among the institutions that stuck to that dream is the African Development Bank. Fifty years later, we can say we can be proud that the African Development Bank has been faithful to the dream of the founding fathers. An institution which has remained true to its mandate and for which Africans and their partners can be very proud. From a modest start, today, the African Development Bank is a first class, world class, institution of global standing, out there with the very best. An Institution that committed around 110 billion dollars since it was founded. An institution whose franchise value grows by the day and which continues to attract new members. Last week I was in Luxemburg to sign the acts of the membership of that country and I am honoured to welcome them today, joining Turkey which has now completed membership procedures. The franchise value of this Bank has been powerfully demonstrated by your decision to triple our capital base four years ago. I have been pleasantly surprised at how, even the poorest countries who subscribed to the capital increase, have been paying up and on schedule. That franchise value has been demonstrated by the way our concessional window, the ADF, has been continuously replenished even at times of tight budgets, as last September, for which I express my deep appreciation.

So on what basis do we assert that, the AfDB has been true to the founding fathers?

First: We have been true by remaining Financially sound. From whatever financial metric, this is a very robust institution, financially, one of the few in the world still rated AAA by all the leading rating companies. Our business has continued to grow, increasing by 45% in the last five years and tripling in the last eight years, our risk bearing capacity is up 25% in the last four years. Even at the most testing period, times of maximum turbulence, such as the global financial crisis, the economic dislocation in North Africa, all our stress tests, for even the most unlikely scenario, return a verdict of very robust risk bearing capacity.

Second: We have remained true to the spirit of the founding fathers by staying relevant. In normal times, making the needed sound strategic choices, emphasizing such things as infrastructure which is the key binding constraint for growth at this time.
We have remained relevant in crisis times, with countercyclical lending, as we did in 2009, nearly doubling lending as high as one to six. In addition, our knowledge products, our voice, have contributed in providing the Member Countries, timely policy advice, while on broader global issues giving an African perspective based on our local knowledge. At all times, in our ability to leverage private capital as high as one to six.
Third: We have remained true by insisting on being a focused institution. We resisted mission creep, a temptation to be everything for everyone. We narrowed on a few areas of comparative strength:
Infrastructure, Economic integration, Private sector, and Governance and support to countries in transition.

Your Excellencies, Governors, We remained true to the spirit of the founding fathers by building a resilient Organisation. In my time as President of this Organisation, I faced many challenges, but I could say three of them tested our mettle.
First challenge: The prolonged operation out of Headquarters. The relocation from our Headquarters in the Ivory Coast was initially thought to be a brief interlude, a few months at most. In the end it ended up as a ten-year sojourn. This meant that staff were operating in circumstances of considerable uncertainty for over a decade.
Second challenge: Three years into my tenure we had to confront the impact of the global financial crisis. Our task was first to minimize the impact on the Bank's own financial health, at a time when banks and non-bank financial institutions the world over were under threat. The second was to find ways to ensure that our countries do not suffer lasting damage. We decided to step up countercyclical lending.
Third challenge: One year into my second term we had to operate right in the middle of the revolution in Tunisia and of course, the subsequent impact of the Arab Spring, and economic dislocation among our major clients in North Africa.
These were challenging moments for the Bank, which could have had an impact on weaker institutions.

Yet at no time was the Bank's operational capacity or its finances weakened, or our ability to serve our clients lowered in quality. To the contrary, business continued to grow in size, in scope, in complexity, as the demand on the Bank's products was on the increase in the aftermath of the financial crisis. I do not know of any institution of this size and complexity which had been through this trauma, yet emerged fully intact.
Only a super resilient Organisation, and staff committed to deliver on their mandate could have been able to pull off this feat.

Finally let me say, the African Development Bank has strived to remain a dynamic Organisation that changes continuously to adapt to Africa's needs.
Just a few examples: The decision to open up the capital to non-Regional countries, a decision controversial at the time, but which multiplied several times the Bank's firepower. The introduction of the private sector window, now accounting for close to 30% of our operations. The new innovative instruments being created all the time to support the private sector. The many institutions we have nurtured: Import Export Bank for Africa, Afreximbank; Housing institution, Shelter Afrique; A Pan African Reinsurance, AfricaRe.

And now the historic decision to create a special vehicle and platform for African infrastructure – Africa50 – a vehicle set to make a step change in the way we finance infrastructure. Remember, the philosophy of Africa50 is to mobilize Africa's own long term savings to fund its own development. Following the decision by our Board to provide equity, as a cornerstone investment, and provide initial funding for project preparation, we will launch Africa50 here today and begin the incorporation. The African Development Bank has also continued to search for new partners to leverage its resources. This afternoon I will have the pleasure to sign with my good friend Governor Zhou of the Central Bank of China, the two (2) billion dollar co-financing instrument for both sovereign and non-sovereign loans, for which I would like to express our appreciation to the People's Republic of China. So while the AfDB has fulfilled its mandate, it must now adapt and reinvent itself.

Africa is going through fundamental mutations.
From demographic dynamics, fast-growing populations to fast urbanization. From the impact of IT to that of climate change. The African Development Bank must now adapt to the challenges of Africa in the 21st century, remembering that the number one mission in 1964 remains valid today.
The theme of the Summit is "The Africa we want." The AU Agenda 2063 provides that clear vision. Those dreams, ambitions are well articulated in Dr. Dlamini-Zuma's "email from Bahar Dar".
Some may feel 50 years is too far away. To the contrary. In our planning process, Africa's vision has suffered too much short termism. Africa needs a long-term view of her interest, her future.
Such as how our external partnerships are defined, or how our natural resources will serve our own industrialization. The Africa we want is in reality no different from what our founding fathers defined at independence.
What is different is that in the last 50 years the world has undergone "tectonic" shifts. Massive shifts in economic power, which so to speak has "democratized" the distribution of that power around the world. We now have poles of economic power in the North, in the East, in the West and parts of the South. Our task now is to ensure Africa is part of that process.

But here is the problem. We must reinvent and re-engineer our development financing model.
On this continent, pools of savings are not insignificant. The willingness to "pool investment strategies". Pooling a bit of our economic sovereignty for collective good is what will define our ability to make progress. This applies not only to financial power, but other sources and capabilities such as our natural resources utilization strategy. The future that is dependent on foreign goodwill is no future. So I return to where I began. The founding fathers of the Bank gave us a principal mission: Africa's single market, where there is free movement of people, merchandise and capital. That is how we will be part of the ongoing global democratization of wealth.

Your Excellencies, Let me now say a few things about our return to our Headquarters in Ivory Coast. Next time we meet in May it will be at our Headquarters in Abidjan. The next twelve months will be a momentous period for the Bank as we go back to our Headquarters. It is a logistical challenge but for which we are well prepared. The road map you approved for the return is being implemented faithfully. The return is already well underway. Many staff have already settled in the Ivory Coast and the feedback is very positive. Others are set to follow. I myself and the Board are moving in early July. We have received excellent cooperation from both Tunisia and the Ivory Coast. I would like, once again, to thank the Tunisian People and Government who were such marvelous hosts during our decade-long stay in Tunis.

I will be stepping down after our next meeting in May, after ten momentous and exciting years. It has been an incredible opportunity to lead the Bank at a time of very deep and fundamental changes in the economies of Africa. It has been a pleasure to work and lead with the support of the highly committed and talented staff. We have done our very best. I hope I have merited the confidence you put on me when you elected me in 2005 and renewed my term in 2010. My Senior Management is equally honoured to be able to return the Bank to its Headquarters as we celebrate the Bank's 50th Anniversary. There remains much to do in the next twelve months, in particular ensuring an orderly return of the Bank to the Headquarters and rolling into place some key initiatives underway. To conclude let me thank you all for your support and the friendship, the Bank continues to enjoy. I thank the Governors, our Board, management and staff of the Bank for their dedication. I thank partner institutions and all those who in one way or another contribute to ensuring the AfDB remains an instrument that serves the African People and which you can always be proud of. God bless you all and thank you for your attention.

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Driving Scientific and Technological Innovation in Africa

OPPORTUNITIES

2014 OSWD Postgraduate fellowships for female scientists

Postgraduate fellowships are offered to female scientists by the Organization for Women in Science for the Developing World (OWSD) at Centres of Excellence in the South. The Fellowship is offered to women scientists to pursue postgraduate research in a field of the natural sciences. The OWSD fellowship is awarded to women scientists from Sub-Saharan Africa and Least Developed Countries (LDCs) to pursue a PhD at a centre of excellence in the South in a field of the natural sciences.

The general purpose of the scheme is to contribute to the emergence of a new generation of women leaders in science and technology, and to promote their effective participation in the scientific and technological development of their countries.

Deadline for sending applications is August 15 2014

For more information:
http://www.opportunitiesforafricans.com/2014-oswd-postgraduate-fellowships-for-female-scientists/

FOURTH CONFERENCE ON CLIMATE CHANGE AND DEVELOPMENT IN AFRICA (CCDA4)

The African Climate Policy Centre (ACPC) will organize the Fourth Annual Conference on Climate Change and Development in Africa (CCDA4) in Marrakesh, Morocco from 13 – 15 October, 2014. The theme of this year's Conference is:Africa Can Feed Africa Now: Translating Climate Knowledge into Action

The African Climate Policy Centre thus invites researchers, scientists, policy makers and practitioners to submit research papers on any of the following main topics:

- Sub-theme I: Improving climate data and information for robust response to Climate Variability and Change in Africa
- Sub-theme II: Implications of recent climate trends and African agricultural production, water management and food security projections
- Sub-theme III: Climate change opportunities for renewable energy development in Africa.
- Sub-theme IV: Enhancing Africa's capacity to mobilize, access and implement climate finance.
- Sub-theme V: Innovation and Technology to enhance agricultural transformation in a changing climate

Important dates:

⇒ 31 July 2014 – Deadline for submission of abstracts

⇒ 10 Aug 2014 – Notification of successful abstracts

⇒ 05 October 2014 – Submission of fully developed papers

For more information:
http://www.climdev-africa.org/node/1665

UNESCO–Equatorial Guinea International Prize for Research in the Life Sciences

The UNESCO–Equatorial Guinea International Prize for Research in the Life Sciences is to reward the projects and activities of an individual, individuals, institutions, other entities or non-governmental organizations for scientific research in the life sciences, which have led to improving the quality of human life. The Prize encourages research and the establishment and development of networks of centres of excellence in the life sciences.

Candidates shall have made significant research contribution to the life sciences to enhance the quality of human life. The prizewinner(s), maximum three, shall be selected by the Director-General of UNESCO on the basis of the assessments and recommendations made to her by an international jury.

The nomination form should be completed in English or French only, and **should reach UNESCO no later than 15 July 2014.**

For more information:
http://www.unesco.org/new/en/natural-sciences/science-technology/basic-sciences/single-view-basic/news/call_for_nominations_unescoequatorial_guinea_international_prize_for_research_in_the_life_sciences/#.U6PtGfmSz3E

Knowledge for Tomorrow – Cooperative Research Projects in Sub-Saharan Africa

- Call for Pre-Proposals for Postdoctoral Fellowships for African Researchers in the Engineering Sciences

VolkswagenStiftung's funding initiative "Knowledge for Tomorrow - Cooperative Research Projects in Sub-Saharan Africa" aims at providing sustainable support for research and research capacity development in Sub-Saharan Africa.

This very specific Postdoctoral Fellowship Program by the Volkswagen Foundation aims at providing sustainable support for research in the Engineering Sciences in Sub-Saharan Africa. It offers opportunities for postdoctoral researchers at both junior and senior (i.e. 3 – 6 years post-PhD) level to develop and conduct their own research projects. While open for any applicant who meets the eligibility criteria, the current call also builds on a previous call for proposals in this area from 2010, and especially invites those junior fellows currently funded as part of this initiative to submit applications for senior fellowships. In the selection process, they will then compete with the other applicants from the region.

Deadline for pre-Proposals is September 5, 2014

For more information:
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http://www.volkswagenstiftung.de/fileadmin/downloads/merkblaetter/MB_81h_e.pdf

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