Whydah

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INSIDE

WHYDAH?

Whydah also spelled Whidah, or Wydah), is any of several African weaver of birds the genus Vidua, the male of which grows long, drooping, predominantly black tail feathers during the breeding season. It is also called widow bird. They belong to two subfamilies, Viduinae and Ploceinae, of the family Ploceidae (order Passeriformes). The name is associated with Whydah (Ouidah), a town in Benin where the birds are common. They are very active birds and difficult to breed in captivity because of their brood nature.

The Academy has chosen Whydah as the name of our newsletter to symbolize our work and dedication to scientific excellence in Africa. All African Scientists should serve the continent and excel in so doing in total freedom with innovation.

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Water Resources Management and Sectoral Analysis in Africa:

Challenges, Constraints and Opportunities for Sustainable Development

Salif Diop

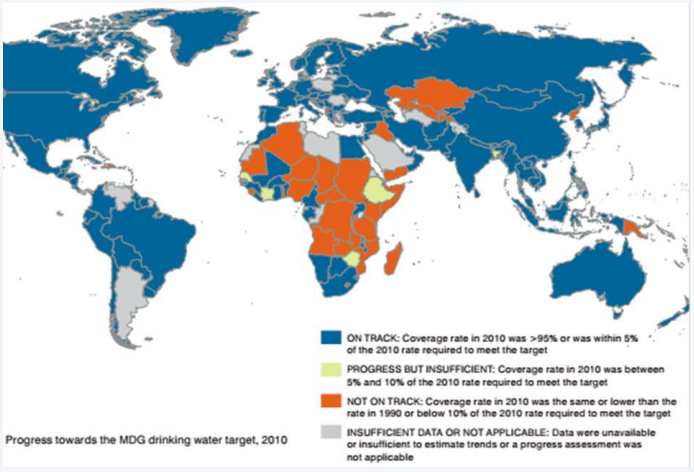
Prof Diop

This article highlights water resources management challenges, constraints and opportunities for sustainable development in Africa. In the last report of the High Level Panel on the Post-2015 Development Agenda (HLP) submitted to the UNSG in May 2013, water has been put very high in the agenda, in particular the issues of water and sanitation, water-energy nexus and water for food. The African Academy of Sciences (AAS) is as well rightly putting water issues, water and sanitation in particular, as a priority area in its new 2013-2018 Strategic Plan.

Water is directly or indirectly used in almost every economic sector in Africa including agriculture, manufacturing, trade, mining, tourism and transport. Water is both an ecosystem 'good', providing drinking water, irrigation and hydropower, and an ecosystem 'service', supplying people, whether they are aware of it or not, with functions such as cycling nutrients and supporting habitats for fish and other aquatic organisms, as well as 'cultural services' such as scenic vistas and recreational opportunities.

Considering the challenge of properly addressing integrated water resource management (IWRM) as a whole, the prospect of improving human well-being in Africa is critically dependent on the capacity to respond to water-related environmental changes which increase risks and reduce opportunities for the advancement of human well-being, in particular efforts to eradicate poverty among poor and vulnerable populations. Because of the complexity of water challenges, including in the various water sectors, responses need to focus on root causes and the underlying drivers of water-related environmental changes rather than only on the pressures or symptoms. Evidence-based policy making requires more reliable data and critically reviewed information, hence the importance of credible scientific assessments

Most countries in Africa are not on track to meet the MDG sanitation target.



Progress towards the MDG drinking water target, 2010

Source: Progress on drinking water and Sanitation update 2012 http://whqlibdoc.who.int/publications/2012/9789280646320_eng.pdf

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Editorial

Editorial:
Water everywhere, water nowhere

In less than two years, we will be taking stock of which of the Millennium Development Goals (MDGs) were met and which we could not. It is obvious that most of the developing world would not meet most or many of the goals set in the MDGs. The goals may have been ambitious but by and large achievable if we had tried hard enough. It is said, "time flies when one is having fun" and if this saying is to refer to the MDGs, then probably the world has just not tried hard enough, hence time has caught up with us so soon. As we draw near to the end of MDGs, already there are preparations of Post-2015 agenda, Sustainable Development Goals, etc. Whichever way the world decides to go, one thing is certain: WE WILL HAVE TO WORK HARDER THAN BEFORE.

Generally, the world met the target of halving the proportion of people without access to improved sources of water, five years ahead of the 2015 timeline. Actually, between 1990 and 2010, more than two billion people gained access to improved drinking water sources. The proportion of people using an improved water source rose from 76 per cent in 1990 to 89 per cent in 2010. Over 240,000 people a day gained access to improved sanitation facilities from 1990 to 2011. Despite this progress, 2.5 billion in developing countries still lack access to improved sanitation facilities and over 40 per cent of all people without improved drinking water live in sub-Saharan Africa. About 40% of the African population do not have access to safe drinking water. Whilst patting our backs for modest gains, we must remind ourselves that there is so much that was not achieved, especially in Africa. Any post 2015 agenda must address the issue of "where to place water". Water is life, water is very critical to everything and is needed everywhere. This unique feature of water as being useful everywhere may very well be its bane. The targets for water are usually spread over all the areas where water can be found. In the end, water is everywhere! And if water is everywhere, then water is nowhere! So, do we need a stand-alone water target for the continent? Is this possible, looking at how water transcends sectors? Will this mean a breaking of the usual "Water and Sanitation" or Water, Sanitation and Hygiene (WASH) agenda/targets? These are really tough decisions to make and they must be made. It is time to think outside the box, again.

Whether we choose a "stand-alone water target" or "Water and 'something' target", one thing is certain: cooperation in water management is key (for Africa and the world) and this must reflect in our strategies and targets to achieve a water-secure continent. If the continent has over 80 trans-boundary river/lake basins and over 60 trans-boundary aquifers, it tells one how critical it will be for total cooperation in setting our water goals and achieving them; be it groundwater or surface water. There is an old Ghanaian saying that states that "a man does not test water with both feet". Now we have one foot in the water and I believe we have tested the water now. Now, we either get it right or we risk being swept away by the water when our second foot gets into the water

Dr. B.A Gyampoh, Editor

MESSAGE FROM THE EXECUTIVE DIRECTOR

This issue of *WHYDAH* is focusing on "Water and Sanitation", one of the identified thematic areas of engagement in the AAS Strategic Plan 2013-2018. This theme is strategically featured in this issue ahead of a forthcoming conference jointly organized by two regional offices of TWAS – TWSA-ROSSA in Nairobi and TWAS-ARO in Alexandria. It is also in line with the intentions of the UN in designating 2013 as the International Year of Water Cooperation.

Many rivers mark the boundaries of several nations, and this may be a source of conflict or cooperation. It is encouraging to note that many African countries have established various structures to ease tensions and to promote cooperation. Examples are The African Water Forum; the Nile Basin Initiative, the Niger Basin Authority, the Lake Chad Basin Commission, the Protocol on Shared Watercourse Systems of SADC, etc. including the continental body AMCOW (African Ministerial Council on Water).

Access to improved water and sanitation is a major challenge in Africa, which has just 61% coverage for access to improved water, while 70% of the continent's population does not have access to improved sanitation. It is projected that 350-403 million Africans will find themselves in water stressed areas by 2055. This number may rise to 350-600 million, if one takes into account the effects of climate change.

As Africa tries to keep the recent momentum of improved economic performance and the inevitable increase in population, the demand for safe-water and better sanitation will become major challenges. The competing demands of water for sustaining life, economic development and the environment will increase. Africa's many large rivers and lake basins, huge deposits of ground water which are not fully exploited and estimated to be about 100 times as much as the existing surface water will need to be exploited with caution to maintain the balance between use and the natural recharge of the reserve. Only last month Kenya announced major aquifers (207 billion cubic meters of freshwater) in the Lotikipi basin of Northern Kenya. (Right: Kenyan Officials)

Kenya Aquifer find: water gushing out of a borehole at Napuu area during the flushing process. Credit: UNESCO/Nairobi Office

AAS's Strategic plan describes how the Academy will work with groups involved in setting policy and research agenda for water and sanitation and practitioners engaged in the implementation of projects. The Academy will advocate for the generation and access to reliable data in water resources and water services, the development of better infrastructure for water and sanitation and the employment of new technologies to improve water delivery and management. AAS will also lobby for the adoption of sound traditional water management and conservation practices. There is also a need to examine our education curricula with the aim of contributing towards enhancing the application of modelling studies and the utilization of credible scientific evidence in decisions related to water and sanitation.

Let me congratulate, once again, the AAS *Whydah* team for choosing a timely topic for our readers

Prof. Berhanu Abegaz,
Executive Director

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Water Resources Management and Sectoral Analysis in Africa:

Challenges, Constraints and Opportunities for Sustainable Development

for better understanding of our freshwater resources for sustainable management and development.

Some examples in line with AAS Strategic Plan:

First example: The challenge of the Millennium Development Goal's safe water target is to halve the proportion of the population without sustainable access to safe drinking water by 2015.

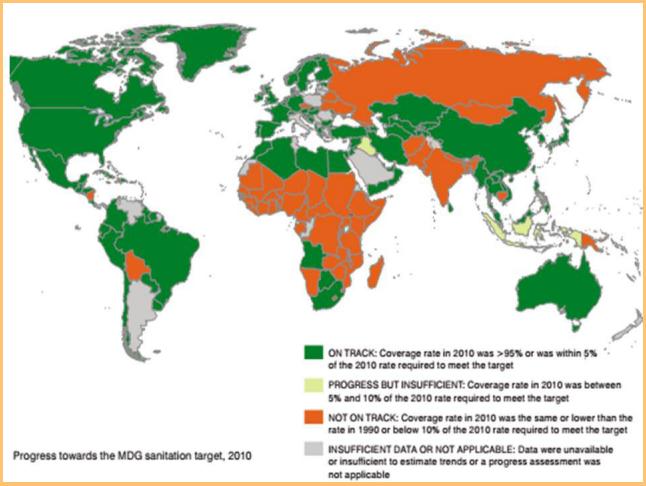
Sub-Saharan Africa has by far the lowest coverage rates of piped water among world's regions (50 per cent) (WHO/ UNICEF 2010). The increase in the number of people with access to other improved sources of drinking water was 3.5 times higher than that in people with piped water on premises. Only five per cent of the rural population receives piped water in their homes compared to 35 per cent of urban dwellers (WHO/ UNICEF 2010).

Limited access to safe water has several implications for Africa. These include high incidence of water-related disease such as cholera, malaria, guinea worm and river blindness; time and energy lost in hauling water from long distances, predominantly by women and girls which deprive them of time to engage in livelihood-generating activities and attending school; low economic productivity resulting from poor health and lost working days and increased time to take care of the sick.

Despite the many reasons for the lack of progress in providing the people of Africa with safe drinking water, there are some serious opportunities to improve the availability of safe water in Africa and lessons can be learned from some African countries that have seen the most progress. The strongest performers in terms of piped water-service expansion are Benin, Burkina Faso, Chad, Ethiopia, Mali and Senegal, all showing growth rates of four to eight per cent per year (Banerjee and others 2009). While rural populations continue to lag behind urban populations globally, countries as diverse as Morocco and Uganda have sustained rapid increases in rural coverage (UNDP 2006a).

Opportunities and solutions should explore the following:

- **Improve financing:** Governments need to spend about one per cent of GDP on water and sanitation. More funding from tariffs, taxes and transfers, in the right mix, can help meet national goals for sustainable water access (Hashimoto Action Plan 2010).
- **Encourage concessions in privatization schemes**: Private investment by domestic and foreign companies that assume responsibility for financing and operating water systems can improve efficiency, reduce water losses, increase supply, extend meters and revenue collection and enlarge coverage; Morocco is an example.
- **Subsidize connections for the poor:** Subsidizing connections for poor households and implementing innovative payment strategies may remove an important barrier to expanding the water-supply network; an example exists in Côte d'Ivoire.
- **Target informal settlements:** Unwillingness to extend services to households lacking legal title, fearing that it could jeopardize revenue collection should be addressed with creativity to deal with the dilemma of water access for people in illegal settlements.



Most African countrie are not on track to meet the MDG sanitation target.

Source: Progress on water and Sanitation update 2012 http://whqlibdoc.who.int/publications/2012/9789280646320_eng.pdf

- **Target rural communities:** Opportunities in rural communities include adoption of free-standing small scale systems capable of treating water; recovering wastewater for re-use and capturing resulting gases as a source of energy for power, lighting and cooking.

Second Example: The Millennium Development Goal's sanitation target is to halve the proportion of the population without sustainable access to basic sanitation by 2015.

Increasing access to water will help Africa improve access to basic sanitation. This must be done while ensuring that water sources are not contaminated by sanitation facilities.

About 585 million of the world's 2.6 billion people without access to improved sanitation facilities are in Africa; about half of the people living in 35 African. Most African countries will not meet this MDG target. Access to sanitation in Africa is increasing with notable increase in the use of improved sanitation facilities in North Africa. But throughout the continent, regional disparities are still very apparent.

Opportunities for improvement of sanitation services are inextricably linked to the improvement of water provision. Thus, the opportunities outlined previously apply here and there are lessons to be learned from countries that have made the most strides in increasing sanitation coverage.

- Recognize the potential to generate revenues from sanitation technologies.
- Encourage and support simple solutions from entrepreneurs
- Introduce urban water tariffs
- Increase sanitation's share in total aid
- Adopt system financing
- Build partnerships between the government and civil society for educational campaigns

Third Example: With a growing population, Africa needs more food and must secure the water needed to ensure its supply at the same time as water resources are becoming scarcer.

Agricultural growth is the mainstay of most African economies.

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Water Resources Management and Sectoral Analysis in Africa:

Challenges, Constraints and Opportunities for Sustainable Development

In sub-Saharan Africa, mostly small-scale farming represents about 30 per cent of GDP and at least 40 per cent of export value. In a number of Africa's smaller nations, agriculture plays a much greater role, accounting for 80 per cent or more of export earnings. Studies have shown that other economic sectors on the continent tend to perform well when there is positive growth in the agricultural sector.

Globally, agriculture accounts for 70 per cent of water consumption (UNEP 2008) but in Africa, as much as 86 per cent of total annual freshwater withdrawal goes to agriculture. Thus, the demand for food is the most important driver of water use in Africa. Africa's food insecurity situation is further compounded by a rising population; rapid urbanization generally accompanied by a rise in personal income and an increase in per capita food intake.

The Opportunities are:

- **Learn from the 1960-1990 Green Revolution:** Africa can learn lessons from the Green Revolution, which saw the yield of major cereals (rice, wheat and maize) more than double during the period 1960-1990 in Asia and Latin America, arresting the threat of famine and lowering the prices of staple crops (FAO 2005). By focusing on small farmer-based agriculture, countries that had food deficits 40 years ago are now food exporters.
- **Promote a greener, Green Revolution in Africa:** By initiating a green (ecological friendly), Africa has an opportunity to grow more food using the same amount of water or the same amount of food using less water. The use of irrigation, synthetic fertilizers, chemical pesticides, early-maturing and high-yielding dwarf seed varieties (the dwarf varieties of rice and wheat were less susceptible to falling over, enabling the application of large amounts of water and fertilizer to boost yields) were critical components of the Green Revolution technology package in Asia. Alternative sustainable farming practices include agroforestry and intercropping cereals with legumes to improve nitrogen-deficient soils and reduce reliance on synthetic fertilizers and pesticides. Increasing productivity on existing cropland is fundamental if Africa is to avoid destroying vital ecosystems such as its biodiversity-rich wetlands and rainforests.
- **Increase irrigation to increase food security:** The estimated rate of agricultural output increase needed to achieve food security in Africa is 3.3 per cent per year. The potential for meeting this increase exists, since two-thirds of African countries have developed less than 20 per cent of their agricultural production and less than 5 per cent of the cultivated area is under irrigation in all but four countries (UNECA 2006).
- **Invest in targeted breeding of drought-tolerant varieties:** For example, the African Development Bank funded and African Rice Initiative coordinated project contributed to a six per cent increase in the continent's rice output during 2007 (World Bank 2008). Such targeted breeding can produce crop varieties that are higher-yielding, more drought-tolerant, utilize fertilizers more efficiently, and are more resistant to pests.

Fourth Example is to Develop Africa's water resources for hydroelectricity to boost energy security.

Hydroelectricity supplies 32 per cent of Africa's energy consumption and is the lowest in the world. Many African nations have a per capita electricity consumption of less than 80 kWh/yr, compared to 26 280 kWh/yr in Norway, 17 655 kWh/yr in Canada, and 13 800 kWh/yr in the United States. Access to electricity is uneven; only one in four people in Africa has access to electricity. More than 90 per cent of the rural population relies on biomass energy sources that include wood, crop waste, charcoal and manure for cooking and heating, and candles and kerosene for lighting. Africa's hydropower potential is underdeveloped.

The constraints to hydropower development in Africa include the unavailability of suitable sites, large capital investments, long lead times to develop, concerns over social and environmental impacts, political instability, and the impacts of climate variability on water resources (World Bank 2010).

In terms of opportunities, Africa has enormous hydroelectricity potential; Africa is the 'under-dammed' continent. Only three per cent of its renewable water is used, compared with 52 per cent in Asia.

The need is to develop hydropower because it will boost the economy and human well-being; invest in hydroelectricity rather than fossil fuels, which make sense in an era of climate change; learn from the many African countries that have developed hydropower successfully; and develop small-scale hydropower projects to avoid the environmental and human costs associated with large dams.

The Grand Inga dam in the Democratic Republic of Congo (DRC) is one of the key projects that will support regional pools. The project is estimated to cost US$80 billion and to have a total installed capacity of 44 000 MWh. Difficulties associated with the project include an absence of political consensus and legal harmonization.

The Africa Water Vision 'An Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment', will be a reality when the following challenges are addressed:

a. Provide safe drinking water;
b. Ensuring access to adequate sanitation;
c. Foster cooperation in transboundary waters;
d. Provide water for food security;
e. Develop hydropower to enhance energy security;
f. Meeting growing water demand;
g. Prevent land pollution and water degradation;
h. Manage "sustainably" water resources under global climate change situation.

To conclude, water in Africa is at the core of sustainable development, being closely linked to some of the main challenges discussed above. This article indicates that all these challenges are interlinked and they need to be addressed in a holistic manner through the process of Integrated Water Resources Management (IWRM), with the perspective of improving human well-being in Africa. This is a critical step if States want to find adequate responses to the mounting water challenges the continent is facing with its growing populations while addressing the significant challenges that remain in order to achieve sustainable development.

About the Author

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DFID, ACU and AAS Launch Climate Impacts Research Capacity Building Project in Africa

By the Whydah team

The Department for International Development (DFID) has approved a 5-year climate impact research capacity building programme for sub-Saharan Africa called "Climate Impacts Research Capacity and Leadership Enhancement (CIRCLE)". CIRCLE will cost £4.85 million and will strengthen institutional research in addition to providing 100 research fellowships from 2013 - 2018. The African Academy of Sciences (AAS) and the Association of Commonwealth Universities (ACU) will be implementing this project.

DFID notes that research capability in Africa in the areas of climate science and climate change impacts, in the generation and utilization of technologies and information systems are seen as generally weak. African institutions and communities are, therefore, challenged to respond to climate change threats.

Between 1981– 2009, scientists in Africa contributed less than 2% of global climate publications. DFID funding is aimed at developing Africa-based research capacity in order to enhance understanding of local impacts of climate change and ultimately inform and influence national and regional policy responses as well as international debate. CIRCLE will competitively identify 60 post-PhD and 40 post-MSc candidates from selected "home institutions" in sub-Saharan Africa to undertake structured research skills development through supervised placement in Africa-based "host research institutions".

The main research themes will be energy, water, agriculture, health and livelihoods as well as the political economy of dealing with climate change impacts. The focus will be to enhance the research skills of African scientists through experiential learning by doing research that offer solutions to the impacts of climate change at local, national and regional levels. Successful candidates will be supported and mentored by a combination of African and international researchers to define researchable climate impact research questions in consultation with relevant public interest groups.

Participating African research institutions will strengthen their research training programmes, mentoring, networking and quality assurance systems. Both home and host institutions will have their research training systems and programmes reviewed with a view to strengthening the rigour and quality of pedagogy. The strengthening of high quality research skills will enable these institutions and researchers to undertake cutting-edge research with the guidance of African and international researchers and publishers/editors that can be published in international peer-reviewed journals. DFID sees this project also as a way of building the capacity of the pan-African scientific institution (AAS).

The programme is expected to deliver the following:

- A gender sensitive increase in the number of high quality African researchers on Climate Change that can successfully design, deliver and communicate peer reviewed research.
- An improvement in the quality and performance of a number of Africa based Research Institutions' research-training management and support systems.
- An increase in annual streams of high quality, relevant and internationally peer-reviewed research products from African researchers.
- A robust assessment of the impact of research capacity building published in an internationally recognised journal.

A call for Expression of Interest (EOI) from potential Home Institutions, Host Institutions and Prospective Candidates will be issued on 30 September 2013.

UKaid from the British people

The African Academy of Sciences

The Association of Commonwealth Universities

University of Maryland Students' Reflection on Climate Change Project: Right Now! Right Here! Together!

By Patricia Downie and Henry Ertl

Such a simple action, one night out that changed my life forever. As a University of Maryland (UMD) student this past spring, I attended the Connect 4 Climate, "Right Here, Right Now campaign" event at The World Bank in Washington, DC, to celebrate and recognize artists around the world who had participated in a competition to link conversations about global climate change to the local actions of our daily lives. I had no idea at the time what an impact this would have on me.

Our professor, Dr. Leszek Sibilski, had explained that along with the excellent opportunity of attending this event, a couple of students from another class were working on a video assignment and needed a little extra help. So a few of UMD students came together and had an excellent evening producing video clips and listening to The World Bank President Jim Yong Kim, Sustainable Development Network Vice President Rachel Kyte, External Affairs Vice President Cyril Muller, Africa Vice President Makhtar Diop, the Global Environment Facility's CEO and Chairperson Naoko Ishii, and the Italian Minister of the Environment Corrado Clini speak and celebrate youth engagement in creative climate action. Good music, good food and a tour of the World Bank Headquarters left us curious, concerned and inspired to do more. Later I found out that The World Bank, the Italian Ministry of Environment, and the Global Environment Facility in collaboration sponsored that event with more than 150 partners.

In the following weeks, the footage taken at the World Bank was stitched together with clips from inside the classroom and, after countless hours of effort put forth by the editors, our professor, and the whole class, we were beginning to see the makings of what Dr. Sibilski claimed to be a message that would inspire thousands. Our professor/mentor was a constant source of inspiration throughout the whole process, no matter how often we rolled our eyes and thought he was over the top with his expectations of our simple 5-minute video. He always

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Maryland Students Reflection on Climate Change Project

Students of the University of Maryland Contemporary Social Problems Class working on Change competition videos with Professor Leszek Sibilski.

Source: connect4climate.org

stood by his word and kept us motivated.

On April 12, 2013, our video was launched on Youtube and the madness began! Everyone involved in the production sent the video off to all friends and family, which, due to our highly diversified classroom, touched base with people of all colors, cultures, and lifestyles in even the first few days. It was very cool seeing comments written in many different languages; symbolizing the unity of all humans on this issue that we are addressing. Soon enough we were recognized by our own local community, the University of Maryland, through published articles on the school website, sent out through email lists, and compliments by department heads.

Amidst all this excitement, I must admit, I did have my doubts about the video reaching 5000 views—the number promised to by our professor, because before long it was evident that the rate of views was slowing down and we were still at least 1000 short of our goal. So the semester ended and our class dispersed having fallen short of our goal, but still satisfied with the places our video had gone and the people it had inspired. So fast forwarding a bit, it was a hot summer day, July 10th to be exact, and having just got home from work I opened my computer and saw that not only had our video landed in Italy, but also had finally reached the 5000 mark and was now considered a transnational social movement! Our simple video began as a local action to promote climate awareness through the UMD student body and now has accumulated just under 6500 views, landed in just under 200 countries and on all six inhabited continents.

Looking back on this overall experience, I believe that it has not only changed and inspired others, but it also has had an impact on my perspective of the world. Just the fact that a small video such as ours can bring such positivity and motivation to so many people of such importance, has given me the confidence to continue to fight for change over subjects that I'm passionate about. Naturally, I am a pessimist, and often think that we are way past the point of no return for our beautiful planet, but I've walked away from this experience with the notion that simply rolling over and giving up is simply not an option. From a very young age, I've been entranced by nature and the balance of life, and it's comforting to know that there are 6500 (and counting) that care about protecting what's left of the wonders of our Earth. A vital lesson learned from this class' video project is that the power to make change lies within the ability to raise social awareness; which is achieved through social action. At 20 years old I've come to learn that people are busy! We all have personal responsibilities that tend to occupy the majority of their daily lives, which is why I now understand how useful little messages such as ours can be. At just 4 and a half minutes, I hope that whoever comes across our video will make time in their busy lives to watch it and, at the very least, hit the like button in order to strengthen our efforts towards a social action even the tiniest bit!

Because of this video and the awareness of the climate change situation that it brought to me, I selected an internship with the Maryland Energy Administration working to incentivize the reduction of carbon dioxide through alternative energies (electric vehicles, solar arrays, and offshore wind farms).

However, the reality of the situation still did not register in my mind until I realized the size and magnitude of the initiative that the state of Maryland and many other states are levying against climate change. I had the privilege of working with Governor O'Malley's energy advisor and the Maryland Clean Energy team as goals to reduce fossil fuel use and CO2 emissions were developed into legislation and resources were allocated to attain these goals. I immediately began to experience the power of legislation and the incentives that are being executed so that commercial industry and residential energy users alike can change to alternative energy sources. Everyone in Maryland can participate in some way if they are aware and committed to change.

I was privileged to attend the Maryland Climate Change Summit led by Governor O'Malley and sponsored by the University of Maryland. I was stunned when I realized that Maryland is obligating billions of dollars in resources over the next few years to combat climate change. Government buildings will be relocated to higher ground. Shorelines are being reinforced and barriers to resist sea level rise are being built. Insurance companies and regulators are restricting areas that are no longer considered safe. This is happening "Here and Now"! Maryland is a progressive state and has joined a regional initiative to combat climate change. The hope is that other states will follow with similar strategies.

We, "The People" need to take heart in one another because we are why all this is so important! The cleanliness and survival of our planet is our destiny. Step up and take a stand to move forward and reduce climate disruptions caused by fossil fuels and negligent behaviors. Right here! Right now! Together!

For the two videos produced by the University of Maryland Students, visit http://www.youtube.com/watch?v=_lHkE54Ye94 http://www.youtube.com/watch?v=2nnyAmY8r80

CLIMATE CHANGE, GM CROPS AND FOOD SECURITY

By Benjamin Gyampoh

"Our partners in Europe have blocked all new bio-crops because of unfounded, unscientific fear" -- George Bush, 2003

Genetically modified foods (GM foods, or biotech foods) are foods that have specific changes introduced into their DNA by genetic engineering techniques. Generally, the aim of genetically modifying food is simple, either to make the food more marketable or make it easier to produce. So far America seems to be leading in the cultivation of GM crops as they are reported to have grown some 66.8m hectares of GM crops, even in 2010. GM technology has been enthusiastically embraced in the Americas and in many Asian countries. Same cannot be said of Europe, though, where many countries are subject to severe restrictions on growing GM crops. Developing countries are also moving quite fast with the cultivation of GM crops. Brazil and Argentina are embracing GM crops. In Africa, Burkina Faso and South Africa are the leaders in cultivation of GM crops. I am not writing to support or fight against the adoption of GM crops but I would like to provoke more thinking along climate change, GM foods and Food Security, especially in Africa. Should the continent just say "NO" to it or we need to look a little more closely?

African countries are particularly vulnerable to climate change because of their dependence on rainfed agriculture, high levels of poverty, low levels of human and physical capital, and poor infrastructure. The negative effects of climate change on crop/food production in Africa are well researched and documented. In Africa, agriculture sector accounts for a large share of GDP, export earnings, and employment. Many studies point to decline in yields of crops such as rice, wheat, and maize. Irrigation water supply reliability is expected to worsen in Sub-Saharan Africa due to climate change. Increasing temperature, low rainfall, altered rainfall patterns and even droughts, flooding, pests and diseases is likely to worsen Africa's food security and the likelihood of having and an increase in the number of malnourished children on the continent. So, what is commonly heard on the lips of many African climate scientists is how to adapt to these changes. How can we continue to grow crops that can tolerate the changing climatic conditions, withstand pests and diseases and increases yield? If there are issues that any African leader should consider, these are!

Let those with the luxury to choose whether to have red meat, white meat or whatever other colour meat not stand in the way of those who are simply asking to have a meal" -- Hon William Ruto, 2010

When a continent is faced with such difficult future, one is likely to grasp at any offer that seems to address these big challenges of food security. One of such offers is "Genetically Modified Crops". Two forms of stress resistance, especially relevant to climate change, are to drought and temperature and there are a number of studies which shows that genetic modifications to major crops such as corn and soybeans have increased their water-deficit tolerance. Enhanced resistance to pests and diseases, salinity and waterlogging, change in flowering times or enhanced responses to elevated carbon dioxide levels have all been demonstrated with GM crops.

There has been so many articles and debates on the advantages and disadvantages of GM crops or foods. When it comes to climate change, some of the argument in support of GM crops are that through the use of low- and no-till farming methods, fuel use and carbon dioxide emissions can be decreased thanks to less tillage. In effect, GM crops can help farmers fight climate change in the following ways:

- Less fuel consumption on farms due to a reduced need to spray crops.
- Better carbon sequestration. With less tillage or ploughing, over time soil quality is enhanced and becomes carbon-enriched since more crop residue can be left on the fields. In addition, since the soil is not inverted by ploughing, less carbon in the soil will be released into the atmosphere.
- Reduced fertilizer use and N_2O emissions. Nitrous oxide has a global warming potential 296 times greater than carbon dioxide. And it stays in the atmosphere for more than 100 years. These emissions can be limited by reduced fertilizer use, which will also mean less water pollution.
- For some crops, it is not cost-effective to remove weeds by physical means such as tilling, so farmers will often spray large quantities of different herbicides (weed-killer) to destroy weeds, a time-consuming and expensive process that requires care so that the herbicide doesn't harm the crop plant or the environment. Crop plants genetically-engineered to be resistant to one very powerful herbicide could help prevent environmental damage by reducing the amount of herbicides needed.
- There are many viruses, fungi and bacteria that cause plant diseases. Plant biologists are working to create plants with genetically-engineered resistance to these diseases

In a report titled, "GM crops: global socio-economic and environmental impacts 1996–2010", UK-based PG Economics concluded, 'crop biotechnology has contributed to significantly reducing the release of greenhouse gas emissions from agricultural practices. This results from less fuel use and additional soil carbon storage from reduced tillage with GM crops. In 2010, this was equivalent to removing 19.4 billion kg of carbon dioxide from the atmosphere or equal to removing 8.6 million cars from the road for one year.'

But there are arguments against the adoption of GM crops too. Here are some of them:

- Changing plants may have lasting effects on other organisms in the ecosystem. The change in a plant may cause it to be toxic to an insect or animal that uses it as its main food source.
- Due to the widespread use of insect resistant genes in crops the insects may become resistant to the genetic modifications. This would cause a widespread loss of crops and plants that have the natural immunity leading to a loss in biodiversity.
- Breeding and cross pollination across unintended species could occur resulting in things such as insect resistant weeds.
- Genetic modification could cause allergies in humans due to gene modification of plants.
- Some studies have shown that it may affect the human digestive system in a number of ways. The incorporation of substances that may interact badly with one another in food or in fact be poisonous to people may happen. The modification of certain genes may make some plant substances difficult to digest at all.
- A major economical concern is that the control of world food sources may be limited to large companies because they own the GM seeds and have the money to start and finish the accreditation process.
- Genetic modification can also make it difficult to know what you are eating, as a plant could contain animals products via genetic engineering. This could cause issues for those with dietary restrictions and religious commitments.

These are samples of the arguments as I have presented them here. But where should Africa go? Technology is good for climate change adaptation. Why shouldn't we go for it? If we go for it, are we ready for the negative consequences if they are true?

I believe the continent must tread carefully. Our leaders should commit resources into research that can be independently conducted to inform our position on whether to accept or not to accept GM foods and GM crops production.

Governance of Geoengineering – A personal view

By Andrew Lockley

Climate change is here to stay. Principally due to the heat capacity of the oceans, we feel the effect of past emissions. Meanwhile, emissions continue, and there's still a rush to build carbon-spewing plants and vehicles.

This is true in the developing world as well as in affluent countries - which are embracing fracking and shale oil. Not only are we bracing ourselves for the warming that's already in the mail, we're also wilfully accelerating the process.

But it gets worse. As sulphurous emissions are cleaned up, the aerosol haze which mutes global warming will fade away – exposing us to the full glare of a changing climate. Furthermore, we are potentially exposed to tipping points in the climate system, such as the postulated release of methane in the Arctic. Even in the unlikely event that we rapidly decarbonise the World economy, we may still find that mitigation is too little, too late.

As a technology, geoengineering is also here to stay. We know we can use Solar Radiation Management (SRM) to 'turn down the sun'. We can do it fairly cheaply, by spreading sulphurous compounds from high-flying jets. It is much cheaper than either adaptation, or rapid, large-scale mitigation. Overall, SRM should work - albeit imperfectly, and with significant side effects. So what should we do with this terrifyingly powerful technology? We must bear in mind two facts. Firstly, we are still emitting rapidly. Secondly, even if we stop, there is at least a chance the climate is already in a dangerous state. Faced with a position like that, it's hard to argue that we shouldn't, at least, explore geoengineering technology. And we'd be exploring for a very good reason: committing to NOT geoengineering looks like a very dangerous idea, indeed.

Beyond exploring, what could deployment look like? The real world is a messy place. We tolerate reckless emissions, and much more besides. Ugly things go on in war and peace - and the world often endures them. We lack effective governance systems for many aspects of international activity - particularly as regards enforcement. We have treaties, which are optional. We have resolutions, which are ignored. We have sanctions, which are ineffective. And finally, we have bombs - which are usually better as a threat than as an intervention. None of the above reliably makes countries behave themselves. So why do we pretend geoengineering will really be properly 'governed' by anything, or anyone?

My argument is that geoengineering might not be governed – at least not formally. There isn't any reason to assume a single, overall, framework of governance will deliver clear and effective policy – regardless of whom that policy favours.

Can we imagine a world where geoengineering isn't formally governed? Let us consider some possible scenarios. A power bloc, like NATO, might start a 'light touch' geoengineering intervention – perhaps 0.5C. NATO may act independently, but likely only with some form of consent from the rest of the World.

Is it possible that a chaotic muddle of overlapping and competing SRM schemes could then exist? NATO's timid geoengineering scheme might be 'topped up' by a bolder nation - perhaps India, looking to preserve its glaciers. This top up could be provided in defiance of another state – perhaps Russia, looking to aid Arctic oil exploration. Would a unilateral India be robustly challenged by Russia? It may depend on international consensus on the preferred global temperature, and also on the relative power of India and Russia.

> *"Could we even imagine that a private firm might start, or top-up, a geoengineering programme?"*

Could we even imagine that a private firm might start, or top-up, a geoengineering programme? Geoengineering firms have already tried to sell carbon offsets from Ocean Iron Fertilization, and they might offer SRM services, too (although these technologies are fundamentally different). Any commercial SRM could only be done with the acquiescence of the international community - but explicit assent may not be needed.

Could regional SRM straddle the line between weather modification and climate control? City mayors may try to control heatwaves, or to steer hurricanes. Certainly, agricultural states may seek to manipulate rainstorms – as many already do. Interventions don't even have to work to be attempted. Like a modern-day raindance, anyone with a chequebook could try to control the weather. What hope, therefore, for formal governance?

Should anyone care about the resulting mess? There often seems to be an assumption that formal governance is 'A Good Thing'. But much human activity is self-organising chaos, as exemplified by the market economy. A Russian bureaucrat once asked "Who is in charge of supplying London's bread?" Nobody's in charge, but London still has bread. The UK & EU governments make rules for the market, and for food standards. They could also step in during an emergency. But they don't exert any day-to-day control over supply whatsoever. Is this really governance?

Even where formal governance is lacking, instability doesn't necessarily follow. War and famine make the news precisely because they're not the norm - even in poorer or less stable countries. The relative peace and stability that many people enjoy comes as a consequence of an international order which often lacks the teeth to enforce its will. The existence of rogue states shows that defiance is an option. Despite this, most nations submit to consensual international cooperation. This is not necessarily motivated by a real fear of enforcement, but perhaps more by a desire for good order. For example, lack of international enforcement against Somali pirates has not resulted in widespread piracy from other nations' shores.

Is it possible we could have "well-run SRM" without formal governance? This isn't a utopian vision. But it may be adequate. There is often a degree of pressure towards a tolerable norm in many fields, and the same might be true of geoengineering. The truly rogue geoengineers may get shot down – perhaps literally, perhaps figuratively. Dithering laggards could be overtaken by bolder actors, likely backed by a silent consensus. The rich and powerful will likely get their way a little too much, but probably not so much that the poor will start flinging nuclear bombs at them.

We may end up doing geoengineering. It may lack formal governance. But it might just turn out OK.

About the Author

Andrew Lockley is an independent researcher in geoengineering. He also moderates the geoengineering Google group. His work has included: the geoengineering of methane; the use of 'serious games' to explore attitudes to SRM; and the use of artillery as an SRM delivery system. Andrew.lockley@gmail.com

SCIENTIFIC PRODUCTIVITY OF THE AFRICAN UNION MEMBER STATES (2005 TO 2010)

African Union's scientific output is relatively small, but growing rapidly, with a growth rate similar to that of India, China and Brazil between 2005 and 2010, according to the NEPAD-AOSTI Policy Brief No. 1, July 2013. The propensity to publish in highly cited journals also grown rapidly between 2005 and 2010.

One important observation is how infrequently African countries collaborate—only 4.3% of the papers in 2008-2010 included inter-African country collaboration, contrasting with a score of 40% for extra-African collaboration between at least one African and one non-African country. A programme to foster cooperative research might help increase the rate of cooperation and accelerate the pace of STI development in Africa.

In terms of specialisation and impact by fields of science, the recommendations contained in this Policy Brief are based on the profile of the African Union as a whole entity. At the individual country and economic communities levels however, the pictures of specialisation and impact follow the general trends observed at the African Union (AU) level but are varied in places, and would necessitate specific country and Regional Economic community (REC) bibliometric profiling. Overall, the trend of science and technology improvement in the African Union is quite promising, and further investigation in a number of areas at a more granular level is warranted.

The African Science, Technology and Innovation Indicators (ASTII) Initiative series is jointly published by the NEPAD Planning and Coordinating Agency (NPCA) and the African Observatory for Science, Technology and Innovation (AOSTI).

For further information on this study, contact Prof Luke E. Mumba, ASTII Programme Coordinator, at lukem@nepad.org.

Monitoring Africa's progress in Research and Experimental Development (R&D) investments

The absence of a robust common set of STI indicators has limited Africa's ability to make evidence-based decisions regarding Science, technology and innovation (STI) indicators. The African Science, Technology and Innovation Indicators (ASTII) Initiative was established in 2007 to inform policies at various levels of leadership and to provide, among other measurements, indicators for monitoring progress towards the achievement of the target of 1% expenditure of GDP on R&D by African Union (AU) Member States.

STI indicators are crucial in monitoring Africa's scientific and technological developments, formulating, reviewing and implementing STI policies and strategies, and more importantly, guiding the continent's march towards achieving its target of 1% of GDP invested in R&D. Africa's history of measuring and monitoring science and technology (S&T) information is mostly available through estimates on S&T data based on indirect measurements in technology-related use, trade and investment, education, and S & T data of international organizations. Africa needs to build its capacity to collect and analyse STI data..

The second in a series of policy briefs produced jointly by African Science, Technology and Innovation Indicators (ASTII) Initiative, the NEPAD Planning & Coordinating Agency (NPCA) and the African Observatory for Science, Technology and Innovation (AOSTI), provided an informed assessment of the extent to which decisions to boost R&D for Africa's socio-economic growth and development have been attained. The policy brief makes the following recommends African countries to:

- Prioritize the measurement of STI on their national development agenda;
- Demonstrate political commitment to the process through sustained data collection;
- Promote continued participation and enhanced ownership of the ASTII programme at country level;
- Build on the experience gained in collecting and analysing STI data by allocating sufficient resources to comply with the 1% target of GDP invested in R&D. This would help to sustain the ASTII programme and increase its significance for the development and implementation of STI policies;
- Embark on additional work as required, including the use of STI indicators for policy formulation, review and implementation;
- Strengthen the statistical capabilities of African countries to improve the quality of data through investment human capital development and Information communication Technology (ICT) infrastructure;
- Strengthen collaboration and linkages between line ministries involved in science and technology and the National Statistics Office.

ASTII believes that these recommendations will promote efficiency in the conduct of R&D surveys on an annual basis and ensure that collected data become official national statistics. Compilation and analysis of R&D data will also allow for systematic monitoring of R&D investments as well as cross-country comparisons of indicators.

Sustainable Energy

Solar Future, Coal Past

By Oliver Tickell.

Germany is undergoing a major transition to a renewable energy system. Even though Germany is neither spectacularly sunny, nor windy, it is generating a significant part of its electricity needs from wind and sun. In July Germany generated a record 5.1 terawatt hours (TWh) from solar PV, beating the record 5 TWh it generated from wind in January. But despite Africa's enormous potential for solar power, far greater than Germany's, many African countries are locking themselves into coal as their power source for decades ahead - especially in the coal-rich south.

"Mining Weekly" reports that South Africa's Eskom is building two new coal fired power stations, including the massive US$10 billion, 4.8GW Medupi plant, and has recently recommissioned another three. So South Africa's current annual coal burn of 190 Mt is set to increase to 250 Mt over the next ten years. In Zimbabwe, China Africa Sunlight Energy is to invest $2.1 billion on a 2.1GW coal plant and associated coal mines.

Yet, solar power capacity already costs under $1 per watt for large installations, and is getting cheaper all the time. Moreover, solar PV generates during the day, just when most needed for offices, power hungry industries and air-conditioners. Concentrated solar power (CSP) systems allow the day's heat to be stored up in hot rocks to supply despatchable power when needed. And solar power causes none of the pollution that is emitted by coal, whether carbon dioxide to drive global warming, or sulphur and particulates to damage human health.

Such is the declining price trajectory of solar PV that within a decade from now, southern Africa's new coal fired power plants will be producing power at far higher prices than solar, even when the cost of pollution is ignored. Either they will have to be shut down - writing off immense capital sums that Africa cannot afford to waste – or power consumers will be locked into high tariffs to keep the plants running. If the latter, anyone able to do so will install their own PV generation and cut themselves off from costly, obsolete coal-powered grids. The likes of Eskom will face bankruptcy.

Oliver at his home following instalation of 4KW solar array: Credit to Adrian Arbib, www.r-eco.co.uk

These mistakes are deeply tragic. The outcome is predictable, yet the political and economic momentum towards coal dependence is apparently unstoppable. This coal fixation represents a huge and unaffordable setback for Africa's development and prosperity.

About the Author:

Oliver Tickell is an author, journalist, economist and campaigner on social, environmental and health issues. He is the author of Kyoto2 (Zed Books 2008) in which he sets out an novel international framework for the control of greenhouse gases in the atmosphere which promises to be effective, efficient and equitable - in contrast to the existing Kyoto Protocol and its failing flexibility mechanisms. www.r-eco.co.uk.

Education

PAN AFRICAN UNIVERSITY RECEIVES 45 MILLION DOLLAR BOOST

Addis Ababa, Ethiopia 21 August 2013- The Pan African University received a major boost on Tuesday this week when a grant agreement for support from the African Development Bank, AfDB was signed by the AU Commissioner for Human Resources, Science and Technology of the African Union, Mr Martial de Paul Ikounga, and the Vice President for Agriculture, Human Development and Governance, Mr Aly Abou-Sabaa of the AfDB in Tunis. The agreement covers the bank's support to the Pan African University amounting to 45 million USD.

The Pan African University is a flagship programme of the African Union, which aims at ensuring that the African University is re-established at the core of Africa's development, as a veritable instrument for achieving the AU vision of prosperity, peace and integration. The PAU's mission is to exemplify excellence and nurture quality in African Higher Education and Research. This will be done through world class programmes at Masters and PhD level, organized under five thematic areas, and hosted in existing Universities in AU Member States. Already, three of the PAU thematic hubs have admitted their first batch of students in Kenya, Cameroon and Nigeria. These first three as well as the central governance of the PAU will benefit from the current support of the AfDB. The fourth and fifth hubs are expected to begin in 2014 in Algeria, and by 2015 in the southern Africa region.

At the grant signing ceremony, the AfDB Vice President explained that the Bank's human resource development programme has a strong focus on addressing unemployment among youth, seeing that African youth account for 60% of the unemployed. He mentioned the lack of technical and entrepreneurial skills and information on the job markets as the major cause for this situation, hence the AfDB would invest over 2 billion dollars in this area of skills development. This is the reason the AfDB is happy to support the Pan African University. The AfDB current grant agreement will support the first three institutes as well as the central governance of the PAU from the AU headquarters and the PAU Rectorate. The Bank VP called on the AUC to continue to ensure quality as well as gender equity in the PAU, towards meeting Africa's development agenda.

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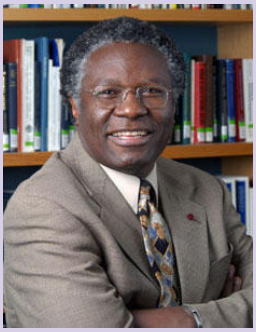
PAN AFRICAN UNIVERSITY RECEIVES 45 MILLION DOLLAR BOOST

On behalf of the Chairperson of AUC, the Commissioner for Human Resources, Science and Technology said the AU is keen to build the PAU into an institution of first choice for Africans and other youth around the world, and to ensure it operates at par with the best universities in the world. The Commissioner also explained the linkage between the PAU and the revised AU Science, Technology and Innovation Strategy, to ensure internal coherence in continental programmes to address key development issues. The PAU will be one of the implementing instruments of the new Science, Technology and Innovation Strategy, whose operational framework will involve bringing together all African sectorial Ministries. This will ensure that higher education, research and human resource development are intimately linked to and informed by actual needs in the various sectors in order to demonstrate the central role of higher education, Science, Technology and Innovation in addressing Africa's challenges and achieving Africa's collective, ambitious vision.

The Commissioner was accompanied by the Director for HRST, Hakim Elwaer, and the Head of Education Division, Beatrice Njenga, while the AfDB Vice President was accompanied by Director Agnes Soucat; Manager for the Division of Education, Science and Technology, Mr. Sawadogo; Lead Education Specialist Mr. Ettiene Porgo, and Chief Education Specialist Michel Guedegbe among other senior officials.

Education

The New Harvest: Agricultural Innovation in Africa – Calestous Juma



Calestous Juma is a Fellow of the African Academy of Science and professor of the Practice of International Development and faculty chair of Innovation for Economic Development Program at Harvard Kennedy School. He co-chairs the African Union's High-Level Panel on Science, Technology and Innovation, and is author of The New Harvest: Agricultural Innovation in Africa.

Calestous was recently featured in a 15 minutes video on CNN's African Voices. You can watch the entire interview/documentary at http://edition.cnn.com/2013/08/06/opinion/african-innovation-take-on-world/index.html?hpt=hp_t5. He shares his views on how Agricultural Biotechnology can transform Africa.

Calestous Juma directs the Agricultural Innovation in Africa Project funded by the Bill and Melinda Gates Foundation and serves as Faculty Chair of Innovation for Economic Development executive program.

Juma is a former Executive Secretary of the UN Convention on Biological Diversity and Founding Director of the African Centre for Technology Studies in Nairobi. He is a jury member of the Queen Elizabeth Prize for Engineering. He was Chancellor of the University of Guyana and has been elected to several scientific academies including the Royal Society of London, the US National Academy of Sciences, the World Academy of Sciences, the UK Royal Academy of Engineering and the African Academy of Sciences. He has won several international awards for his work on sustainable development. He holds a doctorate in science and technology policy studies and has written widely on science, technology, and environment. Juma serves on the boards of several international bodies andis editor of the International Journal of Technology and Globalisation and the International Journal of Biotechnology.

Prof Wandiga appointed Chancellor of Egerton University

President Uhuru Kenyatta of Kenya has appointed, Prof Shem Oyoo Wandiga, a Fellow of the African Academy of Sciences, as the new Chancellor of Egerton University.

Wandiga is Professor of Chemistry at the Department of Chemistry, and is also the acting Director, Institute of Climate Change and Adaptation at the Univesity of Nairobi. He also served as Deputy Vice Chancellor (Administration and Finance) at University of Nairobi from 1987 - 1994. He was subsequently appointed as the Co-coordinator of the Policy and Planning Task Group of the Ministry of Education (1991), a US$60 million World Bank credit to Kenya Government. He was elected as Kenya's representative to the Executive Board of UNESCO (1995-1999), becoming President of the External Relations and Program Commission of the Board (1997-1999). He was also member of the General Committee and the Advisory Committee on Environment of the International Council for Science (ICSU) (1999-2002). He is a member of the International Union of Pure and Applied Chemistry (IUPAC); Royal Society of Chemistry; American Chemical Society; The International Jury UNESCO Kalinga Prize for the popularization of Science (1999-present); Member of the Jury, L'Oreal-UNESCO Award for women, Condensed Matter Science (Physics and Chemistry) 2004; member of the Board: UNESCO's International Basic Sciences Programme (IBSP) (2004 – to date); member of the Advisory Board, IDRC/DfID Project: Climate Change Adaptation Support Programme for Action Research and Capacity Development in Africa (CCAA) (2006-2008). Chair, Government of Kenya Taskforce on the development of national strategy for University Education (2006-2008).

Fellows

Why Run Before Learning to Walk - Prof Isuon Turner

How Science and Technology Innovation (STI) could generate millions of jobs and proffer a solution to a myriad of national problems is the fulcrum of a book, "Why Run Before Learning to Walk? Reflections on High Technology as a Strategic Tool for Development".

The 620 - page book chronicles Nigeria's science and technology strides during Isoun's tenure as Minister of Science and Technology between October 2000 and May 2007, top of which was Nigeria's launch of its first satellite. The book cites examples of jobs already created by the revolution in the telecommunications sector with its multiplier effects saying adoption of STI will take the revolution to the next level. The book says core value should be placed on STI if Nigeria must get out of the woods.

The book is authored by Professor Turner Isoun, a Fellow of the African Academy of Sciences and the longest serving Science and Technology Minister (October 2000 – May 2007) of Nigeria, with his wife Miriam.

Workshop Announcement: Cell Biology/Regenerative Medicine

The African Academy of Sciences (AAS), The World Academy of Sciences- Regional Office for sub-Saharan Africa (TWAS-ROSSA) announces the 8th Young Scientists Meeting (workshop).

The three-day workshop, whose theme will be Cell Biology/ Regenerative Medicine will take place from 11-13 November 2013. The workshop is intended for early career African professionals from institutions in sub-Saharan Africa.

The workshop will be held at the African Academy of Sciences Secretariat in Nairobi, Kenya.

A unique opportunity

The Workshop will provide a unique opportunity for early career African scientists/researchers in the field of biological and medical sciences, below the age of 45, already involved in or seriously interested in Cell biology and regenerative Medicine. Participants of the workshop will have the opportunity to interact with world class experts particularly from China, Brazil, and India.

The key objectives of the Workshop are:

1. To create a mentoring forum to explore the potential of regenerative medicine to address health issues in Africa,
2. To identify areas of research that are specifically relevant to Africa,
3. To find ways to begin the training of young scientists in the basic techniques of stem cell science and technology,
4. To create a network of young scientists who will lead the development of the field in Africa, and ultimately generate a cadre of future leaders in the field, and
5. To identify a group and possibly form a network of established scientists from Brazil, China and India. We believe that the latter, together with their African colleagues, will be able to guide and train young scientists interested in regenerative medicine in Africa

Programme

The workshop will have lectures to be given over two days with a third day devoted to demonstrations and hands on practical work. Visits to selected specialized labs in Nairobi are also planned. The mix of plenary and panel discussions will offer participants opportunities to interact and learn the latest ideas and practices in Cell Biology and Regenerative Medicine

Below is a summary of the three-day programme

Day I:

Session 1

- Recent advances in Cell Therapy and regenerative Medicine (including ethical, social and regulatory) aspects.
- Current trends and status of Cell Therapy and regenerative Medicine d research in Africa,

Session II

- Presentation by experts from India, Brazil and China.

Day II

Session III

Short Presentations from participants to be followed by discussion on specific applications of Cell Biology/Regenerative Medicine for Africa; Training needs and thematic areas for future workshops; Formation of a core group to plan and coordinate future activities; Discussion on identification of additional experts from Brazil, China and India. This session will also explore the possibility of forming Networks in these countries for future collaboration/training

Session IV – Presentation by visiting resource persons on specific hands on/or demonstrations that will be done on day III.

Day III:

Demonstrations and visits to labs.

Organization

The workshop is convened by The African Academy of Sciences (AAS), The National Commision for Science, Technology and Innovation (NACOSTI) and the The World Academy of Sciences Regional Office for sub-Saharan Africa (TWAS-ROSSA)

Local Organizing Committee:

Dr. Tom Karikui, Director, Institute of Primate Research (IPR);

Dr. Atunga Nyachieo, Head, Department of Reproductive Health and Biology

Prof. Omu Anzala, Programme Director, KAVI & Chairman, Department of Medical Microbiology University of Nairobi.

Prof Berhanu Abegaz, Executive Director, AAS

Ms Olivia Osula AAS, Profram Assistant, AAS

International Partners

- Indian National Academy of Sciences
- Brazilian Academy of Sciences
- Chinese Academy of Sciences

Participation

The workshop is open ONLY to young professionals who have a demonstrated engagement or well developed and institutionally backed interest in the theme of the workshop, ie. Cell biology/regenerative medicine. Those who wish to attend are required to provide a one-page (ca 500 words) motivation for attending the Workshop.

Participation Fees:

There will be no fees for participation.

Contacts:

For further information please contact: Olivia Osula o.osula@aasciences.org