

SCIENCE

SAYANSI

All science information

Issue No. 4

October 2015

The Road to Paris: Africa's climate action plan to focus on adaptation



In this issue

African leaders urged to honour commitments to fund research and development

The African continent is 65 years away from electricity for all

Controversy meets Kenya Deputy President's Announcement on GMOs



EASTLAND HOTEL

NAIROBI

BUSINESS / CONFERENCING / VIP DINING / CASINO / SPA



The Eastland Hotel is a 4 star business hotel primely situated in the heart of Nairobi. The hotel caters for international business travellers with the highest degree of efficiency, conferencing facilities and VIP dining. New for 2014 the hotel is home to the brand new Golden Palace casino.

Whether for business or pleasure, there is lots to see and do during your stay in Nairobi, the "City under the sun".

Eastland Hotel, Ring Road Kilimani, Nairobi, Kenya

www.eastlandhotel.co.ke / +254 20 386 1001/2/3

info@eastlandhotel.co.ke / POBox 35240 - 00200



Who we are

The Media for Environment, Science, Health and Agriculture (MESHA) was founded in November 2005 in Nairobi, Kenya, and is an organization that provides support to science journalists covering health, development, technology, agriculture and the environment. We offer science communication training workshops, consultancies and encourage networking through meetings and conferences among journalists, scientists and other stakeholders in Kenya.

The association emphasizes on rural journalism and communication.

The idea for the formation of this association sprang up from the fact that there were many organizations and communicators in the fields of agriculture, environment, health and development. However, few organizations in the region bring journalists covering these issues together for better reporting in the media.

MESHA believes that in a democratic society where science must be answerable to the public, there is need to find new and innovative ways of effective mass communication about the benefits of science, and other areas of concern to the general public.

MESHA aims to ensure continuity, sustainability and consistent coverage of science and development issues as they arise.

SAYANSI

is a publication of MESHA,
P. O. Box 44199 - 00100, Nairobi
email: coordinator@meshakenya.org
www.meshakenya.org, facebook: mesha Kenya; twitter: mesha Kenya

Editorial Team

Aghan Daniel – Editor
Alex Dianga – Communication Expert
Kiprotich Koros – MESHA
Agatha Ngotho – The Star
Cover Photo: breakingenergy.com



13

GMOs:

A transgenic sorghum variety, rich in vitamin A being developed in Kenya shows early signs of success



14

Agroforestry:

Farmers in Kenya embrace fruit tree innovation to fight 'hidden hunger'



20

Dryland farming:

Hope as farmers in Kenya's dry county embrace dairy farming



23

Paediatric Health:

Gertrude's Well Baby Clinics make great contributions for paediatric health in Kenya



28

Pollution:

Device to revolutionize air quality monitoring and help countries prevent pollution-related deaths launched



30

Beverages:

Anti-oxidants found naturally in Zimbabwean herbal teas have been discovered to be superior to those found in South Africa's rooibos

African leaders must honour their commitments to research and development

That African governments continue to pay little attention to science over the years is indeed a worrying situation that needs to catch the attention of the citizens in this great continent.

The very leaders have time and again participated in conferences which end in them signing declarations proclaiming their willingness to apportion money to steer research and development in agriculture, health and environment.

In many instances, this has just been empty talk with nothing to show for it. Those who dare raise the flag on resource allocation within the budgets are either ignored or branded unpatriotic.

Africa's contribution to global research output stood at a paltry 0.72 per cent in 2012 but nevertheless a double growth from 2003 when the figure stood at 0.44 per cent.

While it is obvious that the governments must implement the declarations, it is time citizens came out in large numbers to challenge their governments to seriously allocate funds with due consideration of their R&D needs. Scientists too, must lead the call by demonstrating to the common man the need for the governments to act. They must showcase whatever little they have achieved and justify their inability to achieve more owing to budgetary constraints. This way, the ordinary man will have positioned himself to demand for science and that demand must be met by knowledge on what is currently being done and what they as the common citizens are losing out on. They must also know that access to resources is a human right which they deserve.

African leaders in the Maputo Declaration of July 2003 pledged to double agricultural investment to 10% of national budgets. Critics point out that the 10% spending target, like all such targets, is a blunt instrument.

Similarly, there is little progress in the Abuja Declaration in which African leaders committed to spend 15% of their budgets on health.

A few countries, have however made significant progress toward meeting this goal. The Democratic Republic of the Congo, for instance, boosted health spending by 286.7 percent from just 2.8 percent in 2001 to 10.8 percent in 2011. As of 2011, six countries met and surpass the 15 percent target: Rwanda (23.8 percent), Liberia (18.9 percent), Malawi (18.5 percent), Zambia (16 percent), Togo (15.4 percent) and Madagascar (15.3 percent). Four countries are clearly on their way to meeting the Abuja target: Swaziland (14.9 percent), Ethiopia (14.6 percent), Lesotho (14.6 percent) and Djibouti (14.2 percent).

In general, AU governments have increased public health spending as a share of their annual budgets by 69 percent. Higher domestic spending seem to have helped reduce new HIV infections in sub-Saharan Africa by 25 percent, and cut AIDS-related deaths by one-third. Further, the number of children who become newly infected with HIV dropped at least by 50 percent in Botswana, Ethiopia, Ghana, Malawi, Namibia, South Africa and Zambia. Save for Botswana, whose health spending dropped from 9.6 percent in 2001 to 8.7 percent in 2011, all of these countries boosted public health expenditure in 2011.

But African governments need to scale up public health spending to drastically reduce its infectious disease burden. As of 2011 at least 69 percent of people living with HIV and AIDS and 90 percent of malaria-related deaths are in sub-Saharan Africa. In addition, nearly a quarter of incidences of tuberculosis cases among people living with HIV and another 80 percent of instances of malaria are in Africa.

The task cannot be left to the governments alone. African companies, institutions and even individuals must step in and do their part by dedicating resources to R&D. It is encouraging that more platforms to fund research in Africa are growing. Perhaps in line with this approach, the Alliance for Accelerating Excellence in Science in Africa (AESA) has announced 11 programmes to benefit from its USD 70 million fund for research and innovation starting September 2015.

The Developing Excellence in Leadership Training and Sciences in Africa (DELTA), will offer grants to science networks and centres in Africa and is supported by Wellcome Trust and DFID.

Another programme called Grand Challenges Africa supported by the Bill and Melinda Gates Foundation seeks engage innovators worldwide to solve the most pressing health and development challenges.

While these are good initiatives, it is disheartening that African institutions and companies are absent. Moreover, these examples are few and far in between. Africa must do more to support and steer R&D in the continent.

Africa aims for climate adaptation in Paris Plan



We experience drought and if it is not drought it is floods. As we speak, Lakes Baringo and Bogoria are flooding, to a level that people are displaced

Caroline Lentupuru - Kenya

By Zeynab Wandati

“Water. I need water.”

Saying this over and over again in her Samburu language, is

Limpa Lanakai, a 35 year-old mother of four and a resident of Mokori in Kipsing - Isiolo County.

“No, I don’t need food. If I have no water, food means nothing to me,” she says, even though her frail body and the crying baby on her back tell a different story.

She and a few other women are on their way to Ewaso Nyiro River, 20 kilometres away - each with a 20-litre jerry can in hand. “That is where we will find water,” Limpa says.

“These days is really hard to get water. With the rain not coming anymore, we have to go very far to get water and we have children. Right now, it will take us all day to get to Ewaso and come back.”

This is the story of the African dry lands, the story of an unforgiving terrain, scarcity of water and a community desperate to survive.

“We experience drought. If it is not drought it is floods,” Caroline Lentupuru of Baringo County says. “As we speak, Lakes Baringo and Bogoria are flooding, to a level that people are displaced, farmlands are submerged and property lost.”



This is the familiar tale of the impact of climate change.

Droughts and floods are the biggest natural disasters that Africa faces, resulting in huge losses and damage. Between 2003 and 2013 for instance, there was an equivalent of 61 drought years in sub-Saharan Africa, affecting 27 countries and nearly 150 million people. These droughts cost the region an estimated USD 23.6 billion (Ksh 2.2 trillion). This is according to a report on the impact of natural disasters on global economies presented at the United Nation's World Conference for Disaster Risk Reduction held in Japan in March.

The report focused on the agriculture sector, which accounts for 22 percent of all economic impacts as a result of natural disasters. Food production suffered the greatest loss and damage in the last decade, with 58 million hectares of crops worth USD 10 billion destroyed. 60 percent of these losses were as a result of floods and 11 million heads of livestock were also lost.

The Horn of Africa has been cited as the most vulnerable region in Africa, with drought related losses and damage worth USD 4.9 billion in the last ten years. In Kenya for instance, the drought between 2008 and 2011 cost the country USD 10.7 billion (Ksh 1 trillion).

"Climate change emergencies cost Kenya 3 percent of the GDP," Mithika Mwenda, secretary general of the Pan Africa Climate Justice Alliance says.

What this means, according to the report, is that Kenya loses 3.7 percent of its per capita Dietary Energy Supply after each drought,

followed by Ethiopia with 3.3 percent, Somalia with 1.9 percent, and Djibouti with 0.2 percent.

In Tanzania, drought alone swallows up 1 percent of GDP. If global temperatures continue to rise, then aggregate models indicate that climate change could lead to net economic costs that are equivalent to a loss of almost 2 percent of GDP each year by 2030 in Tanzania.

Rwanda had its most devastating flood in 2007, which cost between USD 4 and 22 million worth of economic losses – equivalent to 0.1 and 0.6 percent of GDP in two districts. The exact impact of that flood to the economy is still unclear, but is believed that if business continues as usual, then the cost will be an additional 1 percent of GDP each year by 2030.

Across the border in Uganda, a total of 4.11 million people have been affected by climate related disasters of different kinds since 1979. Out of this, 3.2 million suffered severe droughts, 900,000 displaced by floods and 100,000 put down by climate related disease epidemics.

According to scientists, the worst of the story is yet to come, because the world is warming so fast, heading towards a 4-degree rise. Already, 2015 is well on its way to becoming the hottest year in history, with carbon dioxide levels having surpassed acceptable limits for human life in March. This reality is what the global community is desperate to prevent.





Joseph Masava, a farmer in Yatta, Eastern Kenya

"There is still a chance of staying within the internationally agreed ceiling of below 2 degrees of global temperature rise, but the window of opportunity is fast closing," the United Nations secretary general Ban Ki Moon said at the global climate change meeting in Lima, Peru, last year.

But even as the conversation to save the planet gathers momentum, the level of awareness among populations is not as impressive. A report done last month on global perception on climate change shows that Africa is the most concerned about climate change at 59 percent, with Kenya's level of awareness and concern placed at 58 percent. Uganda posted an impressive 74 percent, while Tanzania recorded 49 percent, the least in Africa. There was no data available for the rest of East Africa according to a PEW Research Centre report, done between the 25th of March and 27th of May this year.

"The continent needs USD 50 billion for adaptation if the global temperatures reach two degrees and 100 billion if it reaches 4 degrees," says Dr. Richard Munang of the United Nations Environment Programme.

"Here in Kenya for instance the government thinks that there are more pressing matters, so no attention is being given to climate change,"

says Lillian Yahuma, a tour and travel consultant.

She may not understand the science of climate change but she knows one thing; the rising waters of Lake Nakuru will mean no income for her, because the lake will close for business.

With the Road to Paris activities now in full gear, 54 countries have already submitted their climate action plans to the United Nation Framework for the Convention of Climate Change (UNFCCC), including Kenya, mapping out the steps the country will take in reducing carbon emissions by 30 percent come 203. Kenya's seven-page plan includes expansion of renewable energy, reducing reliance on wood fuels, achieving 10 percent tree cover across the country and delivering more sustainable transport systems.

"Yes, the country is saying that we are going to reduce our emissions by 30 percent but we should remember that we require more adaptation than mitigation in this country," says Mithika.

"Currently in Kenya, we spend 96 percent of our climate funding on mitigation and only 4 percent on adaptation. That should never be the case! Adaptation requires just as much attention," says Charles Mutai, the coordinator of the Climate

Change Secretariat in the ministry of environment. At the moment Kenya's carbon emissions are relatively low, compared to the global average. Most of these emissions are as a result of wood fuel use, and fossil fuel in energy production. In recent years Kenya has invested heavily in renewable energy and geothermal power, which has won the country global accolades. However, Kenya is also looking to set up coal power plants. Coal is non-renewable and a key contributor to greenhouse gas emissions and climate change.

"If you tell the Kenyan government and the other African governments to stop exploring the massive oil and other natural resources we have, they are going to tell to go away because we also need to develop to reach the level of development of the first world," Mithika says.

Dr. Munang is of the opinion that more attention should go to renewable energy, because it has the potential to provide all of the continent's power needs.

"Africa has a hydropower potential of 1,554 terawatts, yet the continent only needs just half of that to light the whole region. There is huge amount of geothermal, as well as wind. So all these tapped into are actually mitigation actions," he says.

It will cost Kenya USD 40 billion (Ksh 3 trillion) to implement this climate action plan.

Other than Kenya, Ethiopia is the only other Eastern African country that has submitted its climate action plan.

Ethiopia intends to cut its emissions by 64 percent by the year 2030, limiting its green house gas emissions to just 145 metric tonnes of carbon dioxide equivalent. Ethiopia estimates that it will need more than USD 150 billion to implement its plan, which focuses heavily on building resilience in the agriculture sector.

Rwanda already has a Green Growth and Climate Resilience National Strategy for Climate Change and Low Carbon Development, which were launched in October 2011.

Based on this strategy, Rwanda's INDC will focus heavily on resilience and adaptation.

The civil society has expressed concern that issues of compensation for loss and damage are conspicuously absent in the plans already submitted by Africa. But loss and damage as a result of natural disasters is always a sensitive subject, especially for climate related disasters.

This is because there is still no agreement on how to go about it. On the other hand, developing countries that suffer the most under climate change—



yet they have the least to do with it – want developed countries to foot the bill when disaster strikes. Developed countries on the other hand want everyone to foot their own bills.

There is also an opinion that even if the whole of Africa went green, it still wouldn't do much in reducing global carbon emissions and therefore it is unfair to ask Africa to foot a bill to fix a problem it didn't cause. But it is not known how much global economies lose.

The numbers vary from source to source. The United Nation's Office for Disaster Risk Reduction reports that the economic impact in the last 13 years is about USD 2.5 trillion, 50 per cent more than any other estimates ever given.

These climate action plans will form the basis of negotiations in Paris this December, where the world is expected to adopt a new climate agreement that will replace the Kyoto Protocol.

mesha
Media for Environment, Science, Health and Agriculture

Kenya Science Journalists Congress 2015

November 23-24, 2015
Eastland Hotel, Nairobi-Kenya



Aflatoxin Research Breakthrough

By Zeynab Wandati

Farmers in Kenya will now access biological control products to manage aflatoxin, after the government approved the unrestricted use of Aflasafe KE01. Researchers say that this bio-control agent can reduce aflatoxin contamination in maize and groundnuts by 75 percent, and increase crop yield by 25 percent. The biological control product has been under controlled research.

Aflasafe is applied in the field before flowering, and it works by the aflatoxin-deficient strains displacing the toxin producing strains in the soil, thereby reducing the source of contamination.

The Kenya Agricultural and Livestock Research Organisation (KALRO) says that Aflasafe has proven its efficacy at 98 percent, and it contains four local strains of fungus that are incapable of producing the toxin.

Kenya has one of the highest incidents of aflatoxin contamination ever documented. Since 2004, the country has suffered severe outbreaks with hundreds of people falling ill due to aflatoxin poisoning.

The Pest Control Products Board has now granted full registration status to the Aflasafe KE01 bio-product, paving the way for its use in Kenya.

This biological control principle, was originally developed by the United States Department of Agriculture's Research Service and is in use in many countries, including Nigeria. In the current budget the government has set aside USD 10.5 million (Ksh 1.5 billion) for aflatoxin control, and already an Aflasafe manufacturing plant is under construction at the KALRO facility in Katumani. However, 230 tonnes of Aflasafe KE01 will be imported from Nigeria for immediate distribution to farmers before it is operational.

Double maize and soybean yields in Malawi



AT A GLANCE:

- **Farmers in Malawi are accessing information, services and markets through an anchor farm model of extension**
- **The anchor farm focuses on the production of soybeans and maize, and uses demonstration plots and field days to highlight the positive impacts of good agronomic practices**
- **Through the project, AGRA has helped train over 24,000 farmers in Integrated Soil Fertility Management (ISFM)**

By **Rebbie Harawa**

A new model of farmer extension is helping farmers in Malawi to increase yields and profitability. Currently, the model is being rolled out across Malawi and being piloted in Tanzania. Implemented by the Clinton Development Initiative (CDI), the farm model uses an anchor farm – a large commercial farm – as a hub to bring surrounding farmers together, providing them with access to knowledge, markets and other services.

Joining the club

Farmers are encouraged to form a group, known as a ‘club’ of 10-20 people. Each club elects a leader who attends training on the anchor farm, before sharing this knowledge to club members, and other farmers. The anchor farm focuses on the production of soybeans and maize, and uses demonstration plots and field days to show the impacts of crop rotation, good cultivation practices, the use of fertilisers

and improved crop varieties, post-harvest handling, and business skills such as calculating costs of production, as well as profit and loss.

CDI also acts as a broker between the clubs and local banks, to help farmers secure loans to buy inputs. To qualify for a loan, farmers raise the 15 percent deposit, but instead of receiving cash, the loans facilitate the purchase of inputs such as fertilizer and improved seed. Following harvest, grain is taken to a central location where buyers collect the grain. This is also when banks receive loan repayments.

The anchor farm also links farmers to four large soybean buyers.

Training farmers in ISFM

In 2010, the anchor farm received a grant from AGRA to support the farm’s extension activities, particularly efforts to highlight the benefits of Integrated Soil Fertility Management (ISFM) and best practices in soybean agronomy. ISFM is a soil management practice that works

to improve soil health, and in turn soil production through the use of minimum tillage, crop rotations, proper application of fertilizers and incorporation of crop residues to improve soil health. It has not just been farmers who have benefited from the anchor farm project 90 extension staff have also received training on ISFM and good agronomic practices.

The lead farmers from the clubs have also started acting as 'para-extension' agents. Like many countries in sub-Saharan Africa, there is a lack of extension staff. In Malawi,

the ratio of extension workers to farmers is 1:2,000 – meaning the lead farmers are able to help fill the gap and help spread knowledge about good agronomic practices.

More yields and cash in their pockets

Over 24,000 farmers have received training on ISFM practices, with ISFM practices now practiced on nearly 9,000 ha. Farmers are also growing crops on larger areas and also obtaining higher yields. Average soybean yields have gone from 0.7 t/ha to 1.3 t/ha, while maize yields have more than doubled from 1.3 t/ha to 3 t/ha (see figure 1)

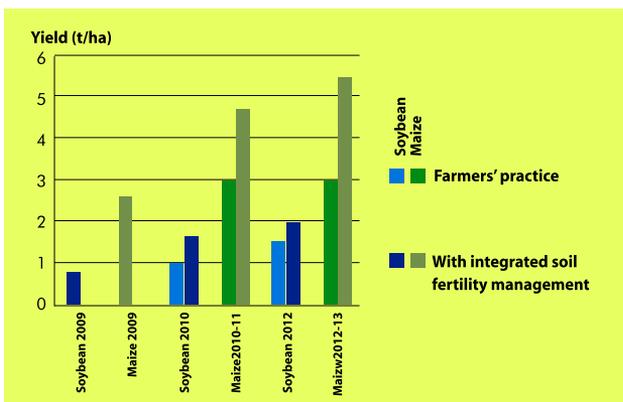


Figure 1. Soybean and maize yields in demonstration plots in Mchinji District, Malawi

Through the anchor farm, over 3,200 farmers have obtained farm input loans from the New Building Society (NBS) Bank; enabling them to easily buy inputs such as quality seed and inoculants. Through the linkages to buyers, the project has also helped farmers to (collectively) sell over 16,000 tons of soybean worth US\$ 8 million.

Drawing in additional investments

The success of the anchor farm has seen it receive additional support from AGRA and other donors. In 2013, the Dutch Government provided US\$ 3 million to enable CDI to replicate the anchor farm business model in Iringa, Tanzania, in the country's highly productive southern highlands. And earlier this year, AGRA awarded a grant for a second phase of the anchor farm model to train 30,000 farmers in ISFM in two new districts – Kasungu and Dowa.

The author is Soil Health Research & Extension Officer, AGRA

Farmer turns around his life family with new extension model



Mr. Divencio Chaduka is one of the farmers who have benefited from the CDI Anchor Farm project in Malawi. Farmers were trained in soybean agronomy and accessed farm inputs through a farm input credit scheme managed by the New Building Society (NBS) Bank. In the 2011/12 cropping season, Mr. Chaduka borrowed MK30,000 (US\$ 120) to buy improved seeds, fertilizer, inoculants and herbicides. That season he harvested 1.1 ton (22 50-kilo bags) from his one acre farm planted to soybean. He sold 21 bags from his harvest for US\$ 864 (MK216,000).

Asked what he did with the money, Chaduka smiled and said: "I improved my home by buying iron sheets and roofed my house. I also bought a modern dinning set, which is over there. That is not all, I used part of the money to send two of my children to school." Traditionally, many homes are roofed with thatch made from plant materials. For the Chadukas, the tin roof means that the family can now sleep through rainy nights rather than struggling all night to keep their bedding dry. When asked if he had any future plans, Chaduka added: "Now I know that money lies in modern soybean farming. I plan to increase the land under soybean in the next season to at least three acres. I also want to buy livestock and open a grocery store in future."

Controversy meets Kenyan Deputy President's Announcement on GMOs

With a rapidly growing population, the world has to double its food production by 2050. The biggest population growth will be in Africa

By Kiprotich Koros

The recent announcement by Kenya's Deputy President William Ruto that the cabinet will lift the ban on GM food imports continues to elicit varied reactions from various quarters. A number of scientists and stakeholders in the biotech industry have reacted with enthusiasm while anti-GM activists and consumer groups are crying foul over the 'unilateral' announcement.

In October the Deputy President who has been advocating for biotechnology declared that 'Kenya will not be left behind as the world adopts biotechnology' and that the cabinet will meet in two months to consider lifting the ban on GM food imports into the country.

The ban was effected in November 2012 after the Seralini report by a French scientist linked GM foods to cancer. The paper was later revoked after a study. The ban, the cabinet stated, would remain in place until such a time that there will be sufficient information, data, and knowledge demonstrating that GM food is not a danger to public health. The then Cabinet Minister for Public Health and Sanitation, the Minister for Higher Education, Science and Technology and the Minister for Medical Services were directed to establish a taskforce to evaluate the health effects of GMO foods. The report has since been handed in but has not yet been made public. The forceful tone of the Deputy President however angered anti-GMO lobbyists and consumer organizations who claim their views and those of the public were being sidelined.

"The Deputy President's announcement denies Kenyans their right to express their views and opinions on the matter before the ban is lifted," Stephen Mutoro,



Hon William Ruto, Deputy President, Kenya

secretary general of the Consumers Federation of Kenya (COFEK) wrote to the National Biosafety Authority. NBA however wrote back noting that consumers were represented in the board by Ms. Dorcas Kamunya who was nominated by consumer groups.

The consumer group also expressed its lack of confidence in Kenya's capacity to 'secure the environment and public health safety in light of GMOs.' NBA chief executive officer Dr Willy Tonui noted that NBA was not getting enough budgetary allocation to effectively carry out its operations.

"The Authority further requires financial support of Ksh 11 million (US\$ 162,134) to enhance its mechanisms for detection of GMOs by establishing a molecular biology laboratory and equipping in order to have capacity towards such. This will not only support development of capacity in detection of GMO events but will also boost public confidence in Kenya's GMO regulation," Dr Tonui said.

Dr. Tonui noted that the budget allocation of Ksh 92 million for 2014/15/16 against a request of Ksh 214 million could not even meet staff cost and "will compromise the Authority's performance in meeting her regulatory mandate."

While the debate on GMOs in other parts of the world has since advanced to concerns over the consolidation of the food industry by biotech conglomerates holding patents of genetically modified crops, possible ecological damage, and pest resistance; the debate in Kenya largely revolves around the safety of GMOs.

The technology's ability to confer new traits to crops such as pest, drought and insect resistance is often cited as a formidable security challenge and tackling the environmental footprint of agriculture. With a rapidly growing population, the world has to double its food production by 2050. The biggest population growth will be in Africa and this number is expected to double by 2045. This will require a paradigm shift in how food is produced. Africa is said to have largely missed the benefits of green revolution – mechanization, use of fertilizer and quality hybrid seeds - which helped turn around the agricultural sector in Asian countries. But even with its immense potential biotechnology remains the most controversial technology yet. Skeptics often point out safety concerns over its allergenicity and potential toxicity that may result from the introduction of foreign genes to plants.

There seems to be a broad scientific consensus that genetically engineered products currently in the market pose no greater risk than conventional crops. The European Commission Directorate-General for Research and Innovation reported that "the main conclusion to be drawn from the efforts of more than 130 research projects is that biotechnology, and in particular GMOs, are not per se more risky than conventional plant breeding technologies."

On July 24, the authority received an application for consideration of open cultivation of genetically modified insect resistant maize.

The authority will make the final decision on the application based on risk assessments, socio-economic considerations and comments received from the public. According to the 2009 Biosafety Act, this decision has to be made within 150 days but not earlier than 90 days.

GM sorghum to have high vitamin A content



By SAYANSI Correspondent

A genetically modified sorghum variety bio fortified with vitamin A being developed in Kenya is showing early signs of success. Researchers working on the variety say that they have managed to boost vitamin A content by more than a hundred times from about 0.5 microgrammes in conventional crops to about 50 microgrammes. Scientists working under the Africa Biofortified Sorghum (ABS) project also report they have been able to 'dramatically improve its stability during storage.'

"The improvement of Vitamin in sorghum to levels that may result in delivery of increased levels of vitamin A to resource poor communities in some parts of Africa is a significant development," said Dr. Michael Njuguna, Director for the Food, and Nutritional Security Program at Africa Harvest.

"This is an important improvement for an African food that is naturally deficient in key nutrients," he added.

Vitamin A levels normally degrade after three weeks of storage and continue to do so over time, explained Dr. Njuguna. "We have been able to reduce beta-carotene degradation by over 100 per cent under certain conditions; this means that farmers can store the vitamin A enriched sorghum for longer periods," he added.

Sorghum is the second most important cereal in the world with Africa producing about 20 million tonnes of the global production of 60 million metric tonnes. Sorghum does well in Africa's semi-arid and sub-tropical climate and most other food insecure regions in the world. It is primarily grown as a food crop in Africa but under small scale, traditional and subsistence production with unpredictable yield is usually affected by drought, pests, disease, poor soils and drought.

Normally, vegetable rich in nutrients cannot grow under such conditions. Up to half a million children in Africa become blind from Vitamin A deficiency with increased risk of cognitive impairment, disease and death from severe infections. Micronutrient deficiency also known as 'hidden hunger' is not obvious until it is too late when there is permanent damage with lifelong consequences.

About 300 million people depend on sorghum in Africa and do not have access to another staple that provides essential nutrients that sorghum lacks says Dr. Njuguna.

The ABS project brings together DuPontPioneer which contributes the technology, Africa Harvest, the Kenya Agricultural and Livestock Research Organization (KALRO) and other national research organizations in Africa. The variety is however still under confined field trials.

Fruit tree portfolios for year-round nutrition launched in Kenya



A woman farmer plants a fruit tree seedling on her farm in Machakos

By Daisy Ouya

World Agroforestry Centre (ICRAF) researchers have launched a novel approach to tackle the problem of micronutrient deficiencies, also known as ‘hidden hunger.’ The fruit tree portfolio approach involves cultivating a set of fruit trees on farms, which is carefully designed to supply nutritious fruits to eat throughout the year, for diverse diets and improved health.

The fruit tree portfolio for a particular locality gives the optimum number and combination of ecologically suitable agroforestry tree species to provide for year-round fresh fruits for households’ requirements of vitamin C and pro-vitamin A, both essential nutrients. Because the trees in the portfolio have

different harvest seasons spanning the entire calendar year, they provide a year-round supply of at least one fruit species per month for the household.

The fruit tree portfolio approach was developed by scientists within ICRAF’s Tree Diversity, Domestication and Delivery programme under the auspices of the European Commission (EC)- and IFAD-funded Fruiting Africa project.

“A diverse diet containing fruits and vegetables every day is recommended to address hidden hunger, a global problem with serious negative impacts on human well being and development,” said Stepha McMullin, a social scientist at the World Agroforestry Centre (ICRAF) and one of the developers of the fruit tree portfolio methodology.

The lack of vitamins and other micronutrients in growing children is one of the factors that lead to stunting—an irreversible condition that limits both normal physical and cognitive development, and is estimated to affect nearly a third of children under five in some African countries.

Ecologically suitable

To develop a portfolio, the scientists start by assessing, in a participatory way, location-specific data on current and potential fruit tree diversity, harvest seasons, farmers’ preferences for certain fruit species, availability of fruits from markets, and the occurrence of ‘hunger gaps’—the periods during the year when poor farmer families have finished their stock of grain from the last harvest and the new crop is still growing.

From these data and secondary data on nutrient contents of priority fruit species, a comprehensive list of species is compiled and the most suitable combination of fruit tree species that can be integrated into farming systems is developed. A recommended layout of the species of the farm is also worked out.

Spreading the fruit tree portfolio approach

For Machakos in Eastern Kenya, the first site where the novel approach is being disseminated, the fruit tree portfolio consists of 10 species: mango (*Mangifera indica*), waterberry (*Syzygium cuminii*), chocolate berry (*Vitex payos*), custard apple (*Annona squamosa* or *A. reticulata*), guava (*Psidium guajava*), lemon (*Citrus lemon*), orange (*Citrus sinensis*), desert date (*Balanites aegyptiaca*), pawpaw (*Carica papaya*) and passion fruit (*Passiflora edulis*).

From March 2015, the Fruit Africa Team has worked with partners to establish a fruit tree portfolio demonstration plot at the ICRAF Rural Resource Centre in Machakos.



Fruit tree portfolio establishment in Machakos County

In addition, demonstration plots were established on community nurseries and project farmers' fields. The ICRAF team also developed and distributed communication materials in both English and the local Kikamba language, so farmers can learn about the approach and the nutritional benefits of the fruits produced by their portfolio of trees.

Farmer reactions

The participating farmers were very interested in growing the fruit tree portfolio for their locality, as seen from the high survival rates of the planted seedlings as evaluated some months later. However, the researchers found that for indigenous wild fruit species such as desert date and chocolate berry, which are far less common on farms than the commercial exotic fruits, there was need to raise the awareness among farmers and to promote cultivation.

"Both exotic and indigenous fruit trees have a good potential to be highly productive in the project locality, but many of the wild species are better adapted to the harsh local environment, and some provide more nutritious fruits as compared to common exotic fruit species," said Katja Kehlenbeck, a fruit tree scientist with ICRAF and co-developer of the fruit tree portfolio approach.

"We are working with smallholder farmers, and particularly women who are responsible for household nutrition, to promote both exotic and indigenous fruit trees. The fruit tree portfolio needs to be taken as a whole, if farmer families are to gain fresh fruits year-round," added Kehlenbeck, who also presented some of these findings at the 2nd International Hidden Hunger Conference in Stuttgart, Germany in March 2015.

Scaling up

By using the common methodology developed, the fruit tree portfolio approach can be applied to many other locations in Africa. ICRAF's Stepha McMullin highlighted this methodology and its wider application at a session



Fruits of mzambarau, or waterberry (*Syzygium cuminii*).

PHOTO: KATJA KEHLENBECK/ICRAF

of the Beating Famine Conference in Malawi, in April 2015.

"Fruit tree portfolios offer a long-term, sustainable, and environmentally suitable solution to meeting household nutrition and dietary-diversity needs," said McMullin.

"The trees will be in the landscapes for present and future generations, and continue to feed and nourish future mothers, future children and future farmers."



Mabuyu, the highly nutritious fruit of the baobab tree

PHOTO: AKE MAMO/ICRAF



Silk worms spin money for farmers



**Dr Lusike Wasilwa, KALRO,
Head of Crop Systems**

By Kiprotich Koros

For many people, the sight of worms is disgusting and their rearing repugnant. But for Grace Wainaina, a little known product from silk worm is what has earned herself and her family a steady income.

Most people are familiar with silk but are unaware of what it takes to produce natural silk material – a high value fabric used for making clothes and for other specialized applications.

Grace has made a career across the silk value chain from making yarn, hand spinning and knitting to produce beautiful handmade clothes which she sells to a high end market. A blouse that she is displaying at her stand goes for USD 100 (Ksh 10,000). For many, this is too much money to spend on a blouse. But Grace gives a confident guarantee of its quality and durability proudly displaying the first scarf she made which she now wears as a souvenir round her neck. ‘I have been having this for about five years,’ she says displaying cream scarf still in good shape.

But making fabric out of silk is a painstaking process requiring skill and patience. Even for her experienced hands, she can only produce a metre of yarn in 10 minutes. For an inexperienced person, this can take several minutes.

She picks from the cocoons gathered around her table, strips the tangled web of silk from the silkworm cocoon working them into a mound and finally feeding them into an electric yarning machine, she then straightens the knots as she watches the length of yarn slowly but surely growing.

The tidy length of yarn will soon be subject to her imagination as she knits it adorable scarfs, blouses, table mats and sweaters which she sells for a fortune. The demand for the fabric is so high she cannot meet the demand.

It is this labour intensive nature of producing silk that has seen production in China and Japan drop in the past few years. The two countries have a very high demand for silk products. Wearing clothes made of silk means a lot in Japanese tradition. But the high cost of labour in these countries is driving

production down, says Dr Muo Kasina, Director, National Sericulture Research Centre at the Kenya Agricultural and Livestock Research Organization (KALRO).

“Weight by weight, silk is as strong as steel,” says Dr Lusike Wasilwa, Head of Crop Systems (KALRO). It is this property that sees it being employed to make bullet proof clothes and to reinforce aircraft parts.

“Silk is also used in the biomedical industry to make materials like bandages that are easily absorbed by the body,” says Dr Kasina. As it is a natural protein fibre, it is not rejected by the body.

It is hard to talk of silk and silkworms without talking of mulberry. The best silk is produced by the mulberry silkworm. It derives its name from mulberry because it feeds exclusively on the plant. Without mulberry, there would be no mulberry worm. A case containing 20,000 mulberry silkworms can feed on 800-1000 kilogrammes of leaves at the larval stage. Other species of silkworms feed on castor.

KALRO sees potential for Kenyan farmers to tap into the silk value chain estimated at USD 6-8 billion and production of about 124,000 metric tonnes globally. Kenya and other African countries stand to gain because of the labour it takes to produce silk. In Kenya, the production is very low with only 50 farmers known to rear silkworms. “There is no commercial silk industry in Kenya according to Dr Felister Makini, KALRO Deputy Director General-Crops.

KALRO is now setting up the infrastructure to support sericulture across the country with centres in strategic places including Makueni, Kitui, Bungoma, Naivasha, Thika, Embu and Eldoret.

These will serve as research, outreach, demonstration, collections and extension centres to support farmers according to Dr Makini.

Mulberry does well in coffee and maize growing zones. Farmers are however warned not to spray the crop as this could wipe out silkworms which are very sensitive to chemicals. Farmers also have to keep high sanitary standards to ensure the survival of silkworms.

Mulberry is rich in minerals and is used as a herbal product.

Grow Pigeon Peas, farmers urged

By Waikwa Maina

Come August, hundreds of cereal traders flood dry Ithanga area, located at Kiambu-Murang'a-Machakos counties border in central Kenya.

They will be going for a very prestigious cereal, Nzuu (kamba for pigeon peas), a type of cereal that everyone would wish to have in the daily menu but which has remained a preserve for big occasions such as weddings, funerals and other major gatherings due to its high cost.

Though they remain in high demand among the Agikuyu, Aembu, Meru and Akamba of Kenya, the crop is fast diminishing in most growing areas and is now classified among orphan crops.

But farmers here treat it as a cash crop, taking advantage of inadequate supplies from other regions.

As the farmers discuss Nzuu, one gets to understand strong bond between them and the crop.

But as Mwanzia Ndolo from Ngiriria village says, farmers don't benefit much due to exploitation by traders who take advantage of the bumper harvest, buying a 90kg bag at as low as Ksh 1, 800 (USD 18).

"Go to any market at any time of the year, the cost of two kg tin is never less than Ksh 200 (USD 2), meaning the traders earn not less than Ksh 9, 000 (USD90) per the 90 kg sack. If they bought at half that price from us, serious farmers would be millionaires," Mzee Ndolo says.

The farmers here intercrop the pigeon peas with maize, but more attention is given to the peas due to favorable weather conditions and guaranteed market.

"After double digging, we plant the peas first, then wait for it to rain for two to three consecutive days before planting maize and beans later. Most farmers do a spacing of 10 feet from row and about a feet from crop to crop," the farmer says.



Mwanzia Ndolo from Kandara, Murang'a County in his pigeon pea farm

The area experiences droughts, killing all other crops apart from the peas which are drought tolerant.

Planted during the December short rains, the peas are ready for harvesting starting from August when the long rains subside.

The crop can grow almost everywhere and easily with poor soils and minimal amount of rainfall, but grow faster and produce a higher yield with plenty of water.

"It's among the neglected crops, we try to promote and encourage farmers to grow pigeon peas due to favourable weather conditions and lucrative market, but farmers prefer faster growing crops like vegetables and other horticultural crops," says Peter Njoroge an agricultural expert who notes that the crop is among best crops for improving soil structure, besides having high nutritional value and long shelf life.

Why do hybrid seeds cost more than OPVs?

Lessons from a study tour to India Biotech Cotton Fields

By Margaret Karembu and
Bhagirath Choudhary

Respective of the crops, hybrid seeds are relatively more expensive than the open pollinated varieties (OPVs). As of now, hybrids can be produced for those crops that are cross-pollinated like maize and in some cases for self-pollinated crops like rice where scientists have created a system of fertilization either by deploying CMS (Cytoplasmic Male Sterility) or GMS (Genetic Male Sterility) systems. However, it is difficult to produce hybrids of many self-pollinated crops like cereals (wheat), pulses (chickpea) and oilseed crops (soybean).

One may wonder why there is a need to produce hybrid seeds, who breeds them, who produces them and why do hybrids cost more than OPVs? These are questions that a delegation of 30 stakeholders from six African countries (Ethiopia, Kenya, Malawi, Sudan, Swaziland and Zambia) repeatedly asked during a study tour on biotech cotton hybrids in India. The visit was organized by ISAAA AfriCenter in collaboration with the South Asia Biotechnology Centre (SABC), COMESA/ACTESA, OFAB, PBS, USDA and a local Indian seed company Mahyco from 27th Sept to 2 Oct 2015.



African delegates tour Mahyco Biotech Cotton Hybridization plot in Maharashtra

The African delegation visited and saw hybrid cotton seed production plots both in the fields of public sector institutions such as CCS HAU, Hisar, Haryana and in the fields of Mahyco at Jalna district of Maharashtra.

Hybrid or cross-breed refers to any offspring (hybrid) resulting from the breeding of two genetically distinct individuals (parents).

Hybrids are produced to exploit vigour or heterosis, which is the combining ability of the two distinct parents. Many delegates were curious to know if crossing any pair of inbred parents can produce a desirable hybrid. Notably, the science of cross-breeding is much more intense and rigorous than simply combining any particular pair of inbred parents that may not result in superior offspring or hybrid. Therefore, the breeders have to carefully choose male-female parents that not only synchronize simultaneously but also demonstrate desirable level of uniformity. Importantly, the high level of vigour in female parent and the pollen production ability of the male parent are the common denominator for production of a uniform, superior and high yielding hybrid (F1).

The next important question was, why produce hybrids? Well, it was easy for the delegation to grasp the answer to this particular question from the fields visited and farmers' testimonies. According to 41 year-old cotton farmer Deepak Arun Ambore of Shel Gaon, Aurangabad in Maharashtra, farmers in his village have reaped big from biotech cotton hybrids.



Mr Timothy Ogwang' - State Department of Agriculture



The chairman of the County Executives of Agriculture in Kenya, Hon. Moses Mwanje (front row in cap) and Hon Katana Menza – Kilifi Agriculture CEC (in black shirt) with Mr Choudhary (far right) together with some of the delegates in the field during the visit



Dr Anthony Muriithi of Kenya's Fibre Crops Directorate admire Extra Long Staple hybrid cotton during the India visit

From the family farm where they grow Extra Long Staple (ELS) cotton, they harvest 33-36 mm staple length of ELS Bt cotton much higher than the medium to long staple Bt cotton. As a result, the ELS Bt cotton fetches very high price in the market. They harvest around 120 bolls per plant per season, which is twice the number of bolls harvested by Punjab and Haryana cotton farmers. The cotton crop in this dryland area is a long duration crop with farmers picking cotton bolls 5-6 times in the season compared to 2-3 pickings by farmers in Punjab and Haryana regions.

The delegates unanimously agreed that the introduction of cotton hybrids has greatly improved cotton yields in India. Representatives from Sudan and Malawi confirmed that their countries have already approved cultivation of cotton hybrids, while others like Kenya, Ethiopia, Zambia and Swaziland are at the penultimate stage towards introducing cotton hybrids. Most of them were keen to see the cotton sector in their respective countries utilize the combining ability of male-female parents and exploit not only vigour but also transfer key agronomic and quality characteristics such as higher yield, greater uniformity, improved colour, and in some cases, resistance to biotic and abiotic stresses in the resulting offspring (hybrid).

Another striking attribute of hybridization of cotton was the potential to generate employment in the rural area,

going by the number of hours the process demands. The emasculation and pollination activity for producing cotton hybrid F1 alone generate around 800 days per acre per season of hybrid cotton production plot. Simply put, an acre of hybrid cotton seed production plot for a season of 180 days generates around 800 days or approx 4 days per day of cotton crop season. At the national level, this translates into an enormous opportunity for job creation in rural India, which produces sufficient hybrid cotton seeds that cover 95% of total cotton area of approx 12.5 million hectares. In addition, the farmers who undertake hybrid seeds production earn as much as twice that of growing commercial hybrid cotton crop. Many of the African delegates highlighted the challenges being faced by their respective countries in improving cotton production.

They pledged to share the lessons learned with their respective stakeholders and do everything possible to convince their Governments about this enormous opportunity in cotton for wealth and employment generation in Africa.

Dr Margaret Karembu is the Director ISAAA AfriCenter and Mr. Bhagirath Choudhary is the Director, South Asia Biotechnology Center

Hope as farmers in Kenya's dry county embrace dairy farming

Farmers are now being supported by the ministry of livestock with AI services to increase milk production



Mrs. Jane Muoka, a farmer from Makueni county, in Eastern region of Kenya admires her Friesian calf PHOTOS: PHILLIP MUASYA

By Philip Muasya

Mrs. Jane Muoka from Makueni county, Eastern part of Kenya has depended on relief food for the past 10 years.

Like many farmers in this semi-arid region, Muoka has been sinking into a vicious cycle of poverty as her crops wither prematurely in the farm every season due to harsh weather and inadequate rains.

However, with the introduction of artificial insemination (AI) project being spearheaded by the county government to alleviate poverty, Muoka now sees a glimmer of hope.

Farmers are now being supported by the ministry in charge of livestock to cross breed their indigenous cows with semen from quality bulls to get heifers of high milk production and quality.

"I heard about the project on a local radio and took keen interest. What struck me is the easy access to the service and its low cost. With proceeds from sale of milk from the hybrid cows, I will be able to educate my children," says Muoka, a mother of three.

She has calved a Friesian calf and another cow is expected to calve in December.

She has planted grass on her farm in anticipation of the calves which are heavy feeders saying that livestock rearing is the only viable venture in the arid county.

Joseph Mwinzi also a farmer in the area is now a proud owner of an Ayrshire calf. "I have fully embraced the AI technology. I expect high yields from the heifer as compared to its mother who only gives me three litres of milk per day. As farmers we are happy," says an enthusiastic Mwinzi, a father of two who plans to do away with the indigenous cows.



Mr. Joseph Mwinzi, a farmer from Makueni County, Eastern region of Kenya tending his one month old Ayrshire calf



Mr. Paul Makau, Artificial Insemination (AI) service provider shows Friesian calves born out of the AI technology in Makueni, Eastern region of Kenya

The AI project manager Dr Daniel Ksee, says the county government has deliberately decided to create a dairy economic base by subsidizing the technology to attract poor farmers.

For a service that costs between USD15 (Ksh 1500) to USD 40 (Ksh 4000) depending on the breed, the farmers pay only USD 3 (Ksh300) for the hybrid semen. Those in farmers' cooperative societies pay USD 2.

"We have signed a contract with AI service providers who are stationed in all parts of the county. The service is easily accessible and affordable to all farmers, we believe it's a viable measure against famine and poverty in this area," says Dr. Ksee.

The semen is sourced from Ayrshire, Guernsey, Jersey, Friesian, Sahiwal breeds at the Kenya Animal Genetic Resource Centre.

According to Dr. KSee, 5000 inseminations were carried out last year with a success rate of between 85-90 percent with 216 calves born since July 2014.

"This year we have budgeted KSh9 million (USD 90, 000) for the project up from USD60, 000 (Ksh 6 million) spent last financial year. The budget will be up-scaled every year to reach more farmers," he says.

The cross bred cattle are capable of adapting to harsh climatic conditions and resistant to some vector borne diseases found in the region says Dr. Ksee.

The indigenous breed is small in frame and produces between two to three litres of milk per day, but with the hybrid type, the farmers are looking at between 15 and 20 litres of milk per day per cow.

Paul Makau, a service provider is always on standby with his motorbike to attend to farmers and he handles at least five cases per day.

A mini dairy plant with capacity to process 300 litres of milk per hour has now been put in place by the county government in anticipation of the high milk production. The county government is also looking at venturing in value addition according to the county director in charge of Livestock and Veterinary Services David Musyoki. "We want farmers to have the right breed for milk production, then ensure the animals are well fed and free from diseases," he says.



Be Informed Read ScienceAfrica Online www.ScienceAfrica.co.ke
Limited hands-on Science Journalism/Science Communication INTERNSHIP Available
SCIENCEAFRICA~Uncommunicated Science is Waste!

P.O.Box 57458-00200, Nairobi, Kenya, Tel.020-2053532, Cell +254722843101
 Email : info@scienceafrica.co.ke, Website: www.scienceafrica.co.ke, Facebook: ScienceAfrica

Know your facility

Nairobi to host continental seed forum

By Kiprotich Koros

Kenya's capital city, Nairobi, will play host to Africa's largest gathering for seed traders. According to a press release from the African Seed Trade Association, the annual show piece will be held from March 1 to 3, 2016 at the Laico Regency hotel.

"We are making very good progress with a target of hosting nearly 600 delegates to the annual event," said Justin Rakotoarisaona, secretary general of AFSTA.

In an interview with SAYANSI, Rakotoarisaona noted that this year, the program will be different from other years as training on seed treatment has been confirmed.

According to AFSTA President, Mr. Nicholas Goble, huge opportunities exist for expanding agriculture and boosting employment as well as foreign currency earnings in Africa. He added that the seed association has a big and important role to play in this pursuit.

The congress will mainly discuss how seed traders and producers of seed in Africa can boost their own production targets.

"It is a known factor in Africa that despite the demand for improved seeds in Africa being on a high, the demand has not been met owing, not only to few seed companies in existence, but also due to the fact that most of the existing companies produce less than 1,000 metric tonnes of seeds," said Goble who works for Pannar Seed based in South Africa.

To address his concern, AFSTA has continuously challenged its members to focus on small to medium-size African seed companies to help them realize the need to offer farmers access to quality seed to ensure that Africa becomes the world's bread basket.

www.afsta.org



Justin Rakotoarisaona, Secretary General, AFSTA



The author is the coordinator, MESHA



Gertrude's Well Baby Clinics boost paediatric health in Kenya

By Gordon Otieno Odundo and Nadia Chanzu

Ever heard of the Well Baby Clinic? Well, mothers in and around Nairobi hold in high esteem this service provided by the Gertrude's Children's Hospital.

The hospital, founded way back in 1947, launched the clinics in 2007.

But how did the hospital begin? With the donation of land by Colonel Ewart Grogan, pioneer extraordinaire, in memory of his beloved wife, Gertrude Edith, this magnificent facility was born. Today, Gertrude's is the longest established paediatric hospital in East and Central Africa with 100-bed capacity, 11-outpatient centres across Kenya. Every year, the hospital admits approximately 6,000 patients and attends to 300,000 outpatients. One of the hospital's greatest success stories is the Well Baby Immunization clinic.

The Well Baby Clinic was launched in 2007 to provide immunization services to children at all points of contact with the hospital's healthcare workers, regardless of whether they are paying clients or needy cases. The immunization services are provided in nine clinics in and around



One of the Well Baby Clinics at Donholm, Kenya

Nairobi and two additional clinics in Thika and Mombasa. These sites, located in the most densely populated areas is an effort by the hospital to reach the most underserved with child healthcare services as well as increase training of healthcare workers.

To-date, nearly 270,000 children have been immunized at the hospital's main campus and outreach clinics. The services are now building on the National and Global immunization programs

including the WHO Expanded Programme of Immunization and United Nations Millennium Development Goals to ensure that children in all countries benefit from life-saving immunizations.

Besides providing immunization services, the clinics have an on-site nutritionist and a pediatrician attached in case of further nutritional advice and pediatric assessment. The hospital administers both private and government sponsored vaccines.

The children are either self-referrals with informed knowledge on the benefits of vaccination or identified from the triage or doctor rooms during history taking on immunization status, or referrals from the pediatrician due to a chronic illness. The hospital uses the Hospital Management Information System (HMIS) to increase efficiency, information management and allow for increased coverage with appointment reminders to parents via text messages.



Mr Gordon Otieno Odundo, is the Chief Executive and Dr. Nadia Musimbi Chanzu is a Research Scientist at Gertrude's Children's Hospital headquartered in Nairobi, Kenya

Dope to Hope: Government hands drug addicts a second chance



Health CS James Kamau

By Clifford Akumu

For 14 years, Ms Mercy Wanjiru had been chained to heroin, bhang, bugizi (tablet form) and had nowhere to call home.

Mercy was forced to drop out of Magumoni Primary School in Chuka in Eastern Kenya, while in class six due to lack of school fees.

In 1996, she joined a relative in Nairobi to look for greener pasture. After working for two years, she would abandon her job as a househelp in

Kiambu to move back to Bahati Estate in Nairobi where her relative stayed.

Her addiction to heroin blew in 2000 when she hit the streets.

Today, addicts like her are engaged in productive activities thanks to an ambitious Medically Assisted Therapy (MAT) treatment program that was recently launched by Ministry of Health in collaboration with the United States government.

This was clearly shown in their spoken word performance titled 'Second Chance', which was a moving story of how drugs can ruin lives. The performance climaxed when the addicts are introduced to the program. MAT is geared towards helping people who inject drugs (PWIDs) reduce or stop injecting, decrease risks to their health and return to productive lives.

"Life-changing intervention will clearly change the lives of many patients who have been, for years, chained by illicit drug use," said James Macharia, health cabinet secretary during the launch of MAT in Nairobi county. "This is indeed a great asset to the health sector, because the consequences of not having this treatment in recovery will be very dire," he added.

A significant health concern for PWIDS is HIV infection. The HIV prevalence rate for PWIDs in Kenya ranges from 18 -30 percent compared to only 5.6 percent in the general population.

In addition, the death rate among male users is up to 20 times higher than the general population. "It is important as a nation to control this epidemic among the key populations before it spills over to the general population," said Macharia.

The socio-economic impact of illicit drug use cannot be overemphasized what with destruction of lives; broken families and job loss for drug users. Macharia urged parents to embrace good parenting; and teachers to complement the same in institutions of learning to curb illicit drug use.

"If we join forces as both guardians of our children we will prevent illicit drug use and alcohol abuse," said the Health CS.

In 2013, the U.S Presidents Emergency Plan for AIDS Relief (PEPFAR) program through collaborations on a global scale was supporting ARV treatment to 6.7million people around the world.

Currently around 800,000 people in Kenya are on ARV treatment under PEPFAR.

U.S. ambassador to Kenya, Robert Godec said that his country's support on HIV prevention, treatment, care and support of key populations is part of global war on the disease. "Bringing drug dependency out of the closet into the public health arena is a good move by the Kenya government. This program will wean people of illicit drug use hence reduce the spread of HIV/Aids," said Godec. "We can't shy away from the most vulnerable people of our communities in this case people who inject drugs."



Hellen Muthoni and Mercy Mwende during the interview. Their lives has changed since they were introduced to methadone



U.S. ambassador to Kenya, Robert Godec

In Africa, for example, Kenya is among few countries after, Mauritius and Seychelles to initiate a medically assisted treatment program. "HIV/Aids fight is a war, even worse than the world war. Of course our work does not stop with this inauguration, we have to do more to win it," Godec added. Ministry of Health's key populations programme manager, Elgar Musyoki said that the initiative will eventually help drug users to discontinue risky injection practices.

"We are basically educating drug users to stop injecting because it is unsafe and instead take safe drugs orally," said Ms. Musyoki. She further noted that MAT will help drug users stop criminal activities and engage in meaningful activities as their craving for drugs will be controlled. "We want addicts to be integrated back into the community" she added.

Available data suggests that illicit drug use is wide spread and on the rise particularly in the cities. In Kenya, it is estimated that more than 18,000 people are currently injecting drugs 2 percent of whom are addicted to heroin. More worrying is that, fewer women enroll to care in the rehabilitation programs for drug addicts at 20 per cent compared to men at 80 percent.

The use of these illicit drugs present a public health problem that include risk of premature death, infection with HIV, viral Hepatitis B and CSTIs;

and other physical and mental health problems.

MAT services include daily administration of a drug called methadone as part of a comprehensive package to eliminate or reduce craving for heroin. HIV prevalence rate among people who inject drugs in Kenya is attributed to high risk injecting behaviour such as needle sharing and blood flushing, unsafe sexual behaviour and practices among this population.

"This program is now a major pillar of our HIV/Aids prevention program and it is also in tandem with the government agenda on alcoholism and issues affecting the youth," said Dr. Nicholas Muraguri, director, National AIDS and STI Control Programme (NAS COP).

With support from (PEPFAR), the Ministry of Health, through the National AIDS and STI Control Programme (NAS COP) started MAT in Nairobi at Mathari Teaching and Referral Hospital in December 2014 and Malindi sub county Hospital in February 2015. HIV testing and counseling, HIV care and treatment, TB screening and treatment, hepatitis B and C screening and treatment, condom demo and distribution and psychological counseling and support are among services that the addicts enjoy.

Mercy Mwendu dropped out of Kaloleni Primary School in Mombasa at class seven due to drugs.

Mwendu who used to engage in commercial sex work in Mombasa to buy heroin, confirms that since she was introduced to the program her life has changed.

"With methadone, I no longer have to share needles as we used to which was always unsafe. We are also taught about life skills at the facility," the 26-year old says.

Macharia added that his ministry will procure one year supply of methadone for 1000 patients on the program to add to development partners' support.

"This has been made possible from the domestic HIV financing of USD19 million shillings which the government has put aside in the financial year 2015/2016," he confirmed. Wanjiru and Mwendu are part of the over 500 injecting heroin users in Nairobi and Malindi that have been introduced to the program with Nairobi taking 380 while Malindi 144 users.

Dorothy Achieng, 35, who has been in and out of rehabilitation centres, has now been reunited with her mother and sons.

"I have been able to ward off the withdrawal syndromes from the drugs," says the mother of four boys. Health ministry is working towards ensuring that this program becomes a success by putting more investment in HIV program especially in key populations.

Musyoki said that plans were at advanced stage to scale up the program by involving civil society organizations, private clinics and hospitals around the county.

It is projected that within the next five years over 9000 drug users will be put on this program. "We recognize the need to engage a range of stakeholders to provide a more holistic approach to addressing the needs and welfare of people who use drugs," Musyoki said.

The ministry and respective County governments realize that treatment for drug addiction is expensive but necessary. Dr. Stephen Mule a member of the Parliamentary Health Committee reiterated parliament's commitment to rolling out more funds to scale up the program.

"Parliament has the capacity to pass a supplementary budget that can be rolled out to other counties. Let methadone be available to all the addicts since there are many people who are not on this program," said Stephen Mule, Member of Parliament for Matungulu constituency.

Available data suggests that illicit drug use is wide spread and on the rise particularly in the cities. In Kenya, it is estimated that more than 18,000 people are currently injecting drugs 2 percent of whom are addicted to heroin. More worrying is that, fewer women enroll to care in the rehabilitation programs for drug addicts at 20 per cent compared to men at 80 percent.



How Nairobi can generate all its power from waste

Clean renewable energy from garbage will meet the basic electricity needs of city households and act as a pedestal to the 24-hour economy of the county

By Clifford Akumu

Nairobi county is sitting on 200 megawatts of untapped clean energy from garbage that it could plug the unabatedly high energy deficit, according to experts.

They say energy from garbage can lead to significant economic transformation as envisaged in vision 2030.

“Clean renewable energy from garbage will meet the basic electricity needs of city households and act as a pedestal to the 24-hour economy of the county,” said Evans Ondieki, from the Ministry of Energy and Petroleum.

Africa is struggling out of energy poverty with 621 million people lacking access to grid energy, and 713 million lacking access to clean energy.

Dr. Cosmas Ochieng Obote, director African Centre for Technology Studies (ACTS) said that cheap clean energy intervention would spearhead adaptation to climate change and sustainable development in the county.

“We have sufficient resources to meet the county’s energy needs, they are just untapped,” said Dr Obote.

Like other cities in the world, solid waste management is an expensive venture gobbling up to 30 to 50 percent of revenues. This is unsustainable according to experts and Kenyan cities and towns end up with endless heaps of garbage that become a health risk.

According to a recent survey by UNEP, Nairobi which has a population of 4 million people generates 3,200 tons of waste daily. Only 850 tons reach Dandora dumpsite while the rest remain unaccounted for.

Ondieki challenged county governments to spearhead clean energy uptake stating that Kenya had ‘the best regulations and framework on energy that creates a fertile ground for clean energy access in counties’.

Nairobi Governor, Evans Kidero had mooted the idea of tapping energy from the Dandora dump site to generate power. In an earlier report, Kidero indicated that the organic waste will be used in manufacturing fertilizer. “We are devising ways of producing energy from waste while recycling plastics,” he was quoted saying.

The Kenyan government estimates that the 2013 -2017 National Climate Change Action Plan for climate adaptation and mitigation will require a substantial investment of about US\$ 12.76 billion.

Doctors challenged to prepare for communicable diseases



By Diana Wanyonyi

African doctors have been urged to take health matters seriously so as to contain communicable diseases such as Ebola.

Speaking during the official opening of the 19th Association of Medical Councils of Africa (AMCOA) conference at Sarova

Whitesands Hotel in Mombasa last month, Dr. Nyaquoi Kargbo, the Registrar of the Liberia Medical and Dental Council (LMDC), said the Ebola outbreak will enable medics to rebuild health system with focus on infection, prevention and control of communicable diseases.

“Ebola was a very terrible disease. We need to take our health seriously so that things that we make fun out of will become very serious for our people.” Doctors, he noted, are potential patients, which calls for the mending of the health systems protect themselves and change the way they handle their patients.

Dr. Kargbo observed that Ebola disease in Liberia is under control.

On Ebola vaccine, he observed that there is a trial vaccine going on and the results are not yet out to give people immunity against the virus.

“Wherever there is a good thing we should also be cautious because in a certain situation where people take vaccine long term we don’t know the kind of effects, we don’t know what will be the long term effects of Ebola vaccines yet,” he warned.

He added “we will take each step at a time till we get a result on the efficacy of the vaccine to prevent the manifestation of the Ebola virus.”

Novartis unveils affordable drugs against chronic diseases

Novartis has announced a portfolio of 15 medicines to treat chronic diseases in low and middle-income countries. The portfolio known as Novartis Access, addresses cardiovascular diseases, diabetes, respiratory illnesses, and breast cancer and will be offered to governments, non-governmental organizations (NGOs) and other public-sector healthcare providers for USD 1 per treatment, per month.

“This program takes a novel approach to addressing the rising tide of chronic diseases in parts of the

world where people often have limited access to healthcare. We know we will need to keep an open mindset and learn as we progress on this journey,” said Joerg Reinhardt, chairman of the board of Novartis.

The Novartis Access portfolio includes patented and generic Novartis medicines. It will be launched first in Kenya, Ethiopia and Vietnam. Over the coming years, Novartis plans to roll out Novartis Access to 30 countries, depending on demand.

The products included in the Novartis Access product portfolio have been selected based on the World Health Organization’s essential medicines list

and are among the most commonly prescribed medicines in these countries. Novartis expects this new approach to be commercially sustainable over the long term, enabling continuous support in those regions, according to a press release by the pharmaceutical firm.

Each year, approximately 28 million people die from chronic noncommunicable diseases (NCDs) in low and middle-income countries, representing 75 percent of deaths from NCDs globally.

By 2025, the WHO projects that 75 percent of all deaths will be due to NCDs, mostly due to the rapid increase of NCDs in poverty-stricken areas.

UNEP unveils new sophisticated device to monitor air quality

By **SAYANSI Correspondent**

A ground-breaking air quality measuring device was unveiled in August in Nairobi by the United Nations Environment Programme (UNEP). The device will cost 100 times less and has the potential to revolutionize air quality measurement in developing countries and help prevent deaths from air pollution.

The device, capable of collecting all the vital parameters of air quality, will cost about USD1,500 per unit, allowing governments to establish a countrywide network of mobile and stationary air monitoring stations for as little as \$150,000-200,000. Currently, the same amount of money is used to set up just one monitoring station.

UNEP plans to make the blueprints of its device publicly available. This will allow governments and organizations to assemble or fabricate the units themselves, creating opportunities for innovation, enterprise development and green job creation.

UNEP executive director, Achim Steiner said; "air pollution causes 7 million premature deaths around the world each year with outdoor pollution responsible for more than half of that total. Tragically, these deaths are wholly preventable."

"We know from the World Health Organization that 88 percent of deaths related to outdoor pollution occur in low- and middle-income countries. Yet it is these same developing countries that typically lack access to data on their air quality. UNEP's device can spark a data boom to help countries reduce the negative effects of air pollution, potentially saving lives that would have been lost due to air pollution related illnesses."

Currently, the UNEP Live platform enables near real-time monitoring of air quality from 2000 stations across the world. However, only few of those are located in developing countries and their setup



A ground-breaking air quality measuring device unveiled in Nairobi, Kenya, by UNEP, is expected to cost up to 100 times less than existing solutions. Photo: UNEP

and calibration varies. The new device can successfully bridge this data gap and contribute to standardization of data collection.

A pilot project, inaugurated in Kenya's capital, will further test the device and map the city's air pollution hotspots. It is conducted in cooperation with the ministry of environment and natural resources and the Nairobi county. Preliminary test results, collected by the mobile monitoring unit, show that large parts of the city may have unsafe levels of air pollution, with certain areas particularly affected.

"We would like to establish as many as 50 more units with the assistance of UNEP," said Prof. Judi Wakhungu, cabinet secretary for environment and natural resources. "These could be spread in various parts of the country and, if possible, be based at learning institutions to form part of their regular weather monitoring lessons. With more such units, Kenya will easily map air pollution hotspots in the urban and rural areas," she said.

Despite a generally lower degree of industrialization, African cities also suffer the consequences of poor air quality, mainly

due to high levels of particulate matter, containing hazardous airborne chemicals especially harmful to human health. Most fine particulate matter comes from fuel combustion, both from vehicles and stationary sources such as power plants, industry and households.

UNEP's device can measure the concentration of particulate matter ranging from 1 to 10 microns in diameter (PM 1 - PM 10), including PM 2.5, considered by the WHO to have the greatest effect on human health. It also records the concentration of sulphur and nitrogen oxides and can be extended to measure other gases such as ozone.

The unit was designed for affordability throughout its lifecycle, with less frequent calibration required and a durability of up to 4 years. High quality has been ensured through rigorous testing in various settings, and a built-in GPS system means that the device can also be used as a mobile unit.

The device's low cost and ease of use can also boost community participation in environmental and health monitoring, and increase digital and technological literacy through the participation of schools.



Matatu router launched in Nairobi

By Susan McMillan

In a collaboration called Digital Matatus, researchers from MIT, Columbia University, and the University of Nairobi along with the design firm Groupshot released a map of the entire matatu system last year - a first for a non-formal transit system. And in August 2015, it became the first informal network to be launched on Google Maps. Just as New York commuters can plot their subway routes on the service, residents of Nairobi can now jack into the matatu system on their smartphones.

'Armed with smartphones, ten university students spent four months riding the matatus, noting the name and location of each stop in a purpose-built app, which also used GPS to track the route. In dangerous neighbourhoods, they followed behind the brightly painted buses in private cars.

'When they plotted the GPS coordinates in their software, they generated a neuron-like mass of overlapping routes and colors.

Separating and structuring that mass into a formal subway-style map, designers at the MIT Civic Data Design Lab gave each of the main corridors going through the city center a different color, with well-known landmarks such as the Karura Forest and Ngong Road Forest anchoring the map in the city. A little over a year after starting the project, Digital Matatus released the Nairobi Matatu Routes paper map and the free GTFS transit data in January 2014.

City officials, who had been passively attending project meetings throughout, finally made it their official transit map. And, crucially, they also started using it as a guide for their evolving mass rapid transit proposals. The strength of an ad-hoc system like the matatus is that over time - over many traffic jams and missed appointments - trial-and-error driving can lead to more efficient, emergent routes.

Source: Facebook posting by author

Armed with smartphones, ten university students spent four months riding the matatus, noting the name and location of each stop in a purpose-built app, which also used GPS to track the route.



Anti-oxidants found naturally in Zimbabwean herbal teas

Our own indigenous herbal teas are rich in anti-oxidants and some of them have even higher properties than most imported Chinese and Indian herbal teas as well as South Africa's rooibos

By Sifelani Tsiko

Senior Writer, SAYANSI

A team of researchers from the University of Zimbabwe have discovered that anti-oxidants found in Zimbabwean herbal teas are much more than those found in South Africa's rooibos which has become a hit with tea lovers across the world.

Anti-oxidants can prevent the on-set of degenerative diseases such as cancer, stroke and diabetes.

"Our own indigenous herbal teas are rich in anti-oxidants. Some of them have even higher properties than most imported Chinese and Indian herbal

teas as well as South Africa's rooibos," Lead researcher and PhD biochemistry student, Michael Bhebhe told SAYANSI recently.

Rooibos is also known as bush tea in Southern Africa.

"We also tested their toxicity levels and we found that our local herbal teas have a high margin of safety. Our teas have both food and medicinal properties (nutraceuticals). They are all under-utilised and if we market them aggressively, they have the potential to compete on global scale and help the country to earn more foreign currency and cut its import bill," says Bhebhe.

The University of Zimbabwe research team was made up of Prof Maud Muchuwetu, Prof Dexter Tagwireyi and Batsirai Chipurura – a PhD student among other assistants.

Researchers found out that the zumbani (lippie javanica), Makoni Herbal Tea produced from the leaves of the Fadogia ancyllantha bush that grows mostly in the Eastern Highlands area of Zimbabwe, Mufandichimuka or Umafavuke (myrothamnus flabellifolius), Muwonde or Umkhiwa (Figtree) leaves (ficus sycamora), moringa leaves and baobab pulp and seed mix contained more anti-oxidant properties than most imported herbal tea brands.

“Our indigenous herbal teas are all under-utilised and we need to popularize them for their health benefits,” Bhebhe said. “We want our research to play a significant role to the country’s economic blue-print ZimAsset by providing research findings that can help our industry and local communities to see the benefits of value addition to our natural resources,” he added.

“There has been an avalanche of foreign herbal teas into the country because of aggressive marketing and proven health benefits of teas like rooibos from South Africa and others from China and India.”

The lead researcher said the zumbani and muwonde leaves have two times more phenolic compounds than imported rooibos brands.

Most of the Zimbabwean herbal medicines have been used to effectively treat influenza infection, boost the immune system, build stamina, treat abdominal pain, including menstrual pain, backache and chest pains, coughs and a variety of other ailments for centuries.

In addition, some have been used as aphrodisiacs and to treat fertility problems in women.

Several previous studies have confirmed that the herbs, usually consumed as tea, can suppress the replication of bacteria and viruses.

“Most of these Zimbabwe traditional herbal teas have active anti-viral replication components which help to clean out chemicals which weaken our immune system,” Bhebhe said.

“Our studies have vindicated this and we are encouraging people to drink Zimbabwean herbal teas more regularly and not occasionally when they fall sick. They must drink it often and help our country to cut its huge import bill.”

With the advent of colonialism, antibiotics have been developed and popularized to target various bacterial infections among people while indigenous herbal or natural medicines have been neglected.

However, in recent years, scientists have found out that indigenous medicines have proven to be effective against some viral infections.



A woman picking tea. Zimbabwean tea has been found to contain more antioxidants than those from South Africa

South Africa’s amber tea – rooibos grown traditionally in Cape Town drives an industry which is worth an estimated 600 million rand (US\$52 million) a year.

Local herbal tea producers believe strongly that if various stakeholders pull together, Zimbabwean herbal teas can be fully commercialized for the export market, just like South Africa’s Rooibos Tea Council (RTC) has done with rooibos in that country.

A company producing Makoni Herbal Tea is currently selling only 20 tonnes per year on the commercial market and has a huge potential to surpass this level.

“Rooibos tea was aggressively marketed internationally by South Africans and this has brought health benefits and huge profits to that country’s economy,” he said.

“We need to do the same to our Zimbabwean herbal teas.”

The study which has been accepted for publication in the South African Journal of Botany, opens the door to the development of the country’s herbal medicine industry and helps to give Zimbabwe a place in the global herbal tea industry.

Most of the Zimbabwean herbal medicines have been used to effectively treat influenza infection, boost the immune system, build stamina, treat abdominal pain including menstrual pain, backache, chest pains, coughs and a variety of other ailments for centuries.



Former U.N. secretary general Kofi Annan

Sixty-five more years to realize electricity for all in Africa – report

Graca Machel, a member of the Africa Progress Panel said she was taken aback by the prospect of a 65-year wait for electricity

By a Global Information Network correspondent

Sub-Saharan Africa will still wait for 65 more years to realize electricity for all, says a new report. This is despite the fact that the region lags behind in its ability to generate electricity, hampering growth and frustrating its ambitions to catch up with the rest of the world.

All of sub-Saharan Africa's power generating capacity is less than South Korea's, and a quarter of it is unproductive at any given moment because of the continent's aging infrastructure.

The World Bank estimates that blackouts alone cut the gross domestic products of sub-Saharan countries by 2.1 percent.

This dismaying picture was echoed in the annual report of the Africa Progress Panel, released in June headed by former U.N. secretary general Kofi Annan. The report foresees electricity coming to all homes and businesses in Africa – by 2080.

Graca Machel, a member of the panel and the former wife of Nelson Mandela, said she was taken aback by the prospect of a 65-year wait for electricity.

The report also estimated that an investment of USD 55 billion would be needed yearly to achieve universal access.

Presenting the report at the World Economic Forum Africa in Cape Town, titled "Power People Plant: Seizing Africa's Energy and Climate Opportunities," Annan noted that some African countries are already leading the world in low-carbon climate-resilient development.

"African countries do not have to lock into high-carbon old technologies; we can expand our power generation and achieve universal access by leapfrogging into new technologies," he said.



An electricity pylon in Somaliland being repaired by Edwin Mireri. CREDIT: IPS

However, he cautioned that Africa's energy challenge was substantial. "Over 600 million people still do not have access to modern energy. It is shocking that Sub-Saharan Africa's electricity consumption is less than that of Spain and on current trends it will take until 2080 to catch up."

Modern energy also means clean cooking facilities that don't pollute household air, he went on. "An estimated 600,000 Africans die each year as a result of household air pollution, half of them children under the age of five. On current trends, universal access to non-polluting cooking will not happen until the middle of the 22nd century."

Africa has enormous potential for cleaner energy – natural gas and hydro, solar, wind and geothermal power – and should seek ways to move past the damaging energy systems that have brought the world to the brink of catastrophe.

The waste of scarce resources in Africa's energy systems remains stark and disturbing. Current highly centralised energy systems often benefit the rich and

bypass the poor and are underpowered, inefficient and unequal.

Energy-sector bottlenecks and power shortages cost the region 2-4 per cent of GDP annually, undermining sustainable economic growth, jobs and investment. They also reinforce poverty, especially for women and people in rural areas.

"It is indefensible that Africa's poorest people are paying among the world's highest prices for energy: a woman living in a village in northern Nigeria spends around 60 to 80 times per unit more for her energy than a resident of New York City or London," he declared.

"Changing this is a huge investment opportunity. Millions of energy-poor, disconnected Africans, who earn less than US 2.50 a day, already constitute a US 10-billion yearly energy market."

The panel is an advocacy group which lobbies for sustainable development in Africa and which was originally established to monitor whether the world's leaders were meeting their commitments to Africa.

Edited by Kitty Stapp





Network to accelerate science in Africa launched

Under the African Academy of Sciences and New Partnership for Africa's Development (NEPAD), the Alliance is charged with promoting science and will lead in the development of an African health, research and innovation strategy

African science faces a bright future following the formation of a new body to manage and provide funds for research and innovation within the continent.

The Alliance for Accelerating Excellence in Science in Africa (AESA) has announced 11 programmes to benefit from its USD 100 million fund for research and innovation starting September 2015.

Under the African Academy of Sciences and New Partnership for Africa's Development (NEPAD), the Alliance is charged with promoting science and will lead in the development of an African health, research and innovation strategy according to its Director, Dr. Thomas Kariuki.

"At the moment the African health sciences strategy which ends in 2015 does not have a research and innovation strategy.

AU and NEPAD are leading in the development of another 15-year strategy and AESA is expected to contribute in the development of research and innovation aspects," he adds.

One programme, known as Developing Excellence in Leadership Training and Sciences in Africa (DELTAS), will offer grants to science networks and centres. Each programme will receive about USD 5-10 million in the first cycle of funding lasting five years but AESA has been conceived for 20 years.

"The funding is a strong vote of confidence on AESA and the future of science and research in Africa, says Dr. Kariuki.

DELTAS will support leading African scientists to train a new generation of scientists and demonstrate quality science and address weaknesses in research, infrastructure and policy according to Dr. Kariuki.

DELTAS is being supported by Wellcome Trust and DFID.

"The idea is to build capacity and excellence in centres that are being supported. We look at the totality of issues that is to say, the scientists, their careers, their remuneration and the programmes and projects they implement," added Dr Kariuki.

The fund will support networks of scientists and centres addressing one common challenge and these could span several countries.

Grand Challenges Africa, the second programme under AESA will source ideas from individuals worldwide for research and innovation in Africa with the first winners expected to be announced in 2016. Under the programme USD 100,000 will be given initially for two years for proof of concept. Grantees can then apply directly to the Bill and Melinda Gates Foundation for up to USD 1 million if their idea is promising.

The two programs are supported by Wellcome Trust and DFID; and Bill and Melinda Gates Foundation, with AESA working through NEPAD to mobilize additional resources from governments.

The launch comes amidst a background of few African governments failing to meet their commitments to fund research.

The trend however seems to be changing as support has been increasing with many countries now having systems to guide research in place. However, data on research is still disparate and unquantified, aspects that AESA will be seeking to streamline.

"The message to African governments is that the way to solve some of our socio-economic problems is to invest in science and technology," Dr Kariuki says.

DELTAS will support leading African scientists to train a new generation of scientists and demonstrate quality science and address weaknesses in research, infrastructure and policy

Overlooked grass boosting livestock production in East Africa



Cattle grazing on Brachiaria grass in ILRI, Nairobi PHOTO: BECA-ILRI HUB/SITA GHIMIRE

By Ethel Makila

Researchers in Kenya and Rwanda are harnessing the potential of Brachiaria, a neglected native grass of Africa, to increase livestock milk and meat production in East Africa.

Brachiaria is extensively cultivated in Australia and South America where it has revolutionized the livestock industry. The grass has a higher nutrient content, especially protein, than the commonly used forage Napier. It is also adapted to drought and low fertility soils common in most parts of sub-Saharan Africa. However, the benefits of this grass are yet to be realized by African farmers.

From mid-2013, scientists have been working with farmers in Kenya and Rwanda to improve the availability of Brachiaria in the region. A participatory evaluation of improved Brachiaria varieties led to the identification of five best bet varieties for diverse agro-ecological zones

of Kenya and Rwanda. These varieties are undergoing on-farm evaluation by over 2,000 farmers from Kenya and Rwanda for biomass production and livestock productivity.

The collaborative research for development program on the Brachiaria grass was formulated by the Biosciences eastern and central Africa-International Livestock Research Institute (BeCA-ILRI) Hub in partnership with Kenya Agricultural and Livestock Organization (KALRO), Rwanda Agriculture Board (RAB), International Centre for Tropical Agriculture (CIAT) and Grasslanz Technology Limited. The Swedish funded program already has evidence that points to the potential of these grasses.

Preliminary results from livestock feeding studies conducted by KALRO in Kenya and RAB in Rwanda show that Brachiaria grass increase milk production by between 20 to 40 per cent and as high as 100 per

cent in Kenya and Rwanda respectively. A controlled on-farm cattle feeding study with Brachiaria in Rwanda showed an increase in milk production of 37 per cent over Napier feeding for a four month period.

'Substitution of Napier in feed with Brachiaria has led to an increased average daily body weight gain of heifers over 50 percent for period of 12 weeks' says Mr. Mupenzi Mutimura, Forage Scientist at RAB who leads the Brachiaria program in Rwanda.

'The introduction of Brachiaria grass in Kenya has not only increased milk production but also increased feed availability by up to three months' said Dr. Donald Njarui, the Senior Principal Scientist at KALRO who leads Brachiaria program in Kenya.

The author is the Communication Officer, BeCA-ILRI Hub



Water, Sanitation and Environmental Consultants

SPECIALISTS IN:

- Environmental impact assessment
- Environment audits
- Health and safety audits
- Energy audits
- Solid waste and wastewater management

ENVIRONMENTAL MEASUREMENT

- Air quality measurement
- Noise level measurement
- Water quality measurement
- Electromagnetic fields (EMF) measurement

P.O. Box 1674 - 00100, Nairobi, KENYA, Tel: +254 20 5100359

We are located at Visions Plaza along Mombasa Road on 1st Floor Room 27.

info@mazingiralimited.co.ke, www.mazingiralimited.co.ke