

# FINAL TECHNICAL REPORT / RAPPORT TECHNIQUE FINAL MESHA CONGRESS 2019 - FINAL BULLETIN

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## CONGRESS NEWS BULLETIN

### HEALTH - SICKLE CELL

# Drug under test brings hope for sickle cell in Africa



**A scientist in a research lab: Drug under study in four African countries gives hope to persons with sickle cell.**

**By George Juma | [jumageorge10@gmail.com](mailto:jumageorge10@gmail.com)**

**A** drug, known as hydroxyurea, currently under clinical trials in four African countries may be the panacea for prolonging lives of sickle cell patients, an expert has said.

According to Mr George Muchama of KEMRI-Wellcome Trust programme at Kilifi Referral Hospital in Kenya's Kilifi County the drug has been on trial in Kenya, Uganda, Democratic Republic of Congo and Angola for the past four years. The clinical trials are expected to be concluded in 14 years' time. Specifically, the clinical trials seek to investigate the safety of hydroxyurea as a supportive treatment in children with sickle cell disease.

Scientists, he said, are hopeful that if successful, lives of persons with sickle cell will be prolonged under good management and patient care with the help of the drug.

They added that the success of the study will also lead to a larger trial that will inform national management policies for all children born with sickle cell anaemia in Africa, Kenya included.

Even though the drug has been effective in other parts of the world like Europe, no trials of hydroxyurea have been conducted in Africa where the safety and effectiveness of the drug remain unknown.

Muchama said the situation might be different in Africa and therefore the clinical trials are aimed at assessing the effectiveness of the drugs and also its safety among users in the continent. Reports from the trials team indicate that the drug which makes the body to produce foetal haemoglobin which neutralizes sickle cell has shown substantial progress in the management of the condition.

So far, 150 children at the referral facility have shown some signs of improvement, an indication that the drug is likely to work in the region.

He said they are optimistic that the drug will be effective at the end of the trials; something he said will be a breakthrough in the fight against the disease in the region.

The sickle cell disease specialist however said the affordability of the drug may stifle its uptake by the patients especially those from poor families. One single tablet of the drugs cost Ksh.40 (USD0.4) and those with sickle cell diseases should use at least two tablets daily at a cost of Ksh.80 (USD0.8).

Even though the trials show positive progress, Mr. Muchama said preventing inheritance of the disease remains a key challenge.

He said every couple getting married should undergo a test to determine whether both of them have sickle cell disease, and in cases where they are found to have it, seek for advice before they sire a child together.

Mr. Muchama said a child can only get sickle cell if both parents have the sickle genes and one partner has the sickle cell gene with the other partners is a carrier a condition known as Thalassemia trait.

Currently, stem cell transplant remains the only cure for sickle cell disease. However experts say it can easily lead to death besides being very expensive. The entire treatment costs approximately Ksh.10 million (USD100,000). Chances of the patient surviving are also limited.

Currently, nearly 90 percent of sickle cell patients succumb to the disease before they celebrate their fifth birthday in sub-Saharan Africa, according to a report by the World Health Organization.

The WHO survey done in collaboration with Kenya's Masinde Muliro University in 2018 reveals that Western Kenya and Coastal regions account for 30 percent and 20 percent cases of sickle cell disease respectively.

## How Hydroxyurea works

Sickle cell anemia is a disease in which abnormal hemoglobin protein causes the body to produce sickle- or crescent-shaped red blood cells. These cells have short lives compared to healthy, round red blood cells. The presence of sickle cells is linked to anemia — a condition where the blood cannot carry enough oxygen to the rest of the body.

Hydroxyurea is a medicine that is used to treat certain types of cancer as well as to reduce the frequency of pain crises and the need for blood transfusions in patients with sickle cell anemia. Until recently, it was the only treatment option approved by the U.S. Food and Drug Administration (FDA) for the treatment of sickle cell anemia. In July 2017, the FDA also approved Endari to treat the disease.

Hydroxyurea works by increasing the level of a special type of hemoglobin called hemoglobin F (HbF) in the body. HbF is found at high levels in early stages of development. Compared to the adult form of hemoglobin, HbF is more effective in binding and carrying oxygen around the body. The increase of HbF production stimulated by hydroxyurea prevents the symptoms of anemia from developing.

### MEDIA SCIENCE CAFÉ

# Researcher: Include more women in health study



**Dr Onono stresses a point at the science cafe held alongside Kenya Science Journalists Congress 2019.**

board at the planning stages. This comment was made as a follow up to a recent drug known as Descovoy which will be licensed as a PrEP that can only be used by men and transgenders. Despite women being with higher risk of getting HIV, they were not included in the study done by Gilead.

The expert said that only 8.3% of participants enrolled in HIV cure studies are women. This she observed, calls for women to be at the table to plan trials to ensure more women are enrolled in the studies.

Dr Onono went on to observe that there is need to mobilize stakeholders within and beyond the health sector to help create awareness on HIV prevalence. Finally, the researcher told journalists to report continuously about the need to include women and especially adolescent and young girls in HIV and Family Planning research.

**By Christine Ochogo | [christawine@gmail.com](mailto:christawine@gmail.com)**

**A** researcher at Kisumu's Kenya Medical Research Institute has challenged the media to include more women voices in their stories.

While speaking at the MESH 14th Media Science Cafe held alongside the Third Kenya Science Journalists Congress 2019 in Mombasa last week, the expert told the media to stop angling women issues negatively to the detriment of the fight against HIV and for improving reproductive health outcomes.

Dr Maricianah Onono added that at this age, it is self-defeating for the media to continue vilifying unmarried adolescents 18 years and under who take contraceptives and instead they should put women at the centre while reporting on HIV and Family Planning.

Women, she noted, are often underrepresented in clinical trials on HIV infections, something the media should highlight so that designers of research studies bring more women on

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# Study: Traditional healers key to end mental health stigma

By Manuel Odeny | manuelodeny@gmail.com

**T**raditional and primary health providers should be incorporated in policies to help reduce huge stigma that has been negatively affecting mental health patients in Kenya.

Previous studies on traditional healers' involvement in the management of mental illness in Kenya found that most Kenyans trust the informal providers more to tackle mental health issues than hospitals, despite the former not having capacity for cure.

While most traditional health practitioners were willing to collaborate with hospitals to refer patients, their input is always ignored.

Ms Judy Baariu, the Mental Health Assistant Research Officer under Difu Simo project at the facility says traditional healers can play a big role in identifying and referring mental health patients to health facilities.

Difu Simo, is derived from Giriama language that meaning breaking free.

The project involves engaging in public awareness campaign and participation in schools and meetings (barazas) to help improve knowledge and end stigma associated with mental illnesses.

Encouraging dialogue between health care providers and traditional healers would go a long way in ensuring optimization of care for mental illnesses as traditional healers can play a big role in identifying patients with mental illnesses and referring them to seek health care. This is because most patients may prefer them more mostly fueled by cultural beliefs and myths about causes of mental illnesses," Ms Baariu said.

At KEMRI Wellcome Trust's Neurology and Epilepsy Clinic in Kilifi town, mental health patients get free treatment drawn from across coastal counties as explained by Gilbert Katana, a clinical officer.



**Medical care - this clinic caters for the needs of persons with mental illness in Kilifi.**

"Most patients first stop are traditional healers and prayers as they believe mental health sickness and epilepsy are caused by witchcraft, ghosts and jealous neighbours which is not the case," Katana said.

The two were speaking to journalists drawn from the Media for Environment, Science, Health and Agriculture (MESHA) who visited the facility as part of the delegation attending the Third Kenya Science Journalists Congress in Mombasa.

A research 'Priority mental, neurological and substance use disorders in rural Kenya: Traditional health practitioners' and primary health care workers' perspectives,' by Mary Bitta and others done at the facility in Kilifi area, support the experts views. The research was done between February and April 2018.

"Optimizing treatment and care for people with mental health requires utilization of all available resources within a health care system," the report stated after analyzing eight focus groups of primary, traditional health practitioners and faith healers.

The World Health Organization's Mental Health Gap Action Program (mhGAP) noted that over 75 per cent of people with

mental sickness live in low and middle-income countries where the informal group forms major step of care givers.

"Most patients seek services when their condition is severe after taking longer at traditional healer," Katana said.

Makao, a 56-year-old traditional healer said most of them are willing to refer patients to hospitals.

"I will give you my medication for 3 days and if there is no improvement on the fourth day, then you have to go to hospital," Makao said.

Mental illness is a manageable condition and can be treated on time when symptoms are detected early and traditional healers are incorporated on time, the research states.

"When you get unprovoked seizure several times within 24 hours or suffer from depression the best cure is seeking medical help. Most extreme cases of suicide can be treated on time," added Katana.



**Mike Okal of *icipe* fields questions from journalists at the field visit site.**

## Scientists harvest animals body odour to repel tsetse flies

By Agatha Ngotho | [angotho@gmail.com](mailto:angotho@gmail.com)

**R**esearchers have developed a repellent that protects livestock against trypanosomiasis disease which is caused by tsetse flies.

Livestock keepers living near Shimba Hills Game Reserve in Kenya's South Coast are now all smiles as they have become beneficiaries from the cheap biological and environmentally friendly technology.

Michael Okal a researcher and entomologist at the International Centre of Insect Physiology and Ecology (*icipe*) said researchers at the institute have developed a repellent technology for protecting livestock against animal African trypanosomiasis disease, also known as nagana.

He spoke last week during the Kenya Science Journalists Congress organized by the Media for Environment, Science, Health and Agriculture network in Mombasa for writers from East Africa.

"This is an innovative technology that mimics the odour of waterbucks that are naturally not preferentially bitten by tsetse flies. It is safe for the environment and relatively cheap for farmers to use. It is a mobile technology that allows cattle to remain protected even while moving about," he said.

He added that the technology being upscaled in the area is known as the waterbuck body odour repellent because it is formulated to smell like the animal.



**Field work: *icipe* tsetse fly learning centre.**

*icipe*, he observed has working with these livestock keepers for the last 10 years to optimize and adapt the technology for dissemination. Okal said the disease is more common in areas around game reserves where tsetse flies commonly occur.

He said that the beneficiaries bring their livestock for blood sampling and screening for trypanosomes.



**A technician from *icipe* screening blood samples to test for trypanosomiasis.**

“This is an exercise that we do monthly with about 3, 000 cattle which we screen to see if they are infected or not. By doing so, we monitor if the repellent technologies effectively protect livestock or not. This allows us to evaluate the tsetse control technologies that we are upscaling,” Okal said.

“Cattle keeping in this area ten years ago was a hard sell. When *icipe*’s researchers first came here, 70 percent of all the animals in this area that nears Shimba Hills were infected by the disease. Most of those died and those that survived could not provide milk, give birth or even plough land,” he said.

The researcher said that through the use of the repellent collar, farmers barely lose animals to trypanosomiasis. “We have increased cattle ownership with many farmers doubling their herd sizes. There has also been increase in milk production by up to 80 percent in some cases. In general, farmers use relatively less trypanocidal drugs and plough more land in the area using oxen,” said Okal.

How then is the collar technique done? “Tsetse use smell and vision to select animals to bite. Researchers at *icipe* identified the body smell of those animals that tsetse do not like biting, like the waterbuck.

They then formulated synthetic equivalents of the body odour and developed a slow release mechanism to dispense it. This is now worn by cattle as a collar so that when the flies pass near the cattle, they think it’s a waterbuck and avoid it.”

He added that farmers will need to replenish the collar every six weeks at a cost of approximately Sh100 (USD1). The costs however he said will be finally determined by market balances and could be lower. Okal confirmed that human African trypanosomiasis or sleeping sickness in human has not been reported in Kenya in the last 20 years. “But the disease is always a threat because we have the tsetse fly species that transmits human trypanosomiasis, and there are risks within the borders of Uganda and Tanzania,” he said.

He noted that the disease is not easy to diagnose and treat in human beings making this an obstacle to control it.

“Our goal as *icipe* is to develop a repellent so that in future we could just use something like a bracelet, an equivalent of a collar to prevent human beings from being bitten by the fly,” said Okal.

**With all these hopes, the researchers fear sustainability challenges may send all the work they have done into the trenches as *icipe* will soon halt the project among herders in the Mcolwa Tangini area, Kwale county of Kenya**

# Mombasa Marine Park: The never ending eye-catching site

By Suzgo Chitete | [chitetesuzgo@gmail.com](mailto:chitetesuzgo@gmail.com)

Seeing is believing, so they say. True to this old adage, Rwandan journalist Julius Bizimungu dared to experience snorkeling into the deep waters of the Indian Ocean to see for himself marine biodiversity.

This was his first time and it was after a brief lecture to all the team of eight journalists who were in the marine tour of the popular Mombasa Marine Park. This was a field trip which was part of this year's edition of Kenya Science Journalists Congress organized by the Media for Environment, Science, Health and Agriculture (MESHA).

"Science journalists must feel, taste and live the science. Oftentimes we report without experience. I went into the water to see for myself what the park official was telling us. We must not always believe without trying too hard to get the evidence," said the Kigali based writer, working with New Times.

Mombasa Marine Park is home to over 200 species of fish and it attracts an average of 300 visitors every day, both from within and outside Kenya. It has existed since 1986.

The journalists had a rare opportunity to ride a customized – boat which has a glass floor to allow passengers see for themselves the beauty under water.

Scribes drawn from eastern and southern Africa enjoyed the ride as they took turns to either capture nature under water or take pictures which will remind them of the exotic experience of this year's edition of the conference.

"This was awesome. I have watched people snorkeling on television and after the Marine official gave us a brief, I felt like having an experience. Scaring as I was I still wanted to give it the view of the fish inside the water was a beautiful sight. I am happy I did it," added Julius in an interview that took place immediately he came out of the sparkling but salty water of the Indian Ocean.



**The author takes time to read a message on a Warden's Tshirt at the Mombasa Marine Park.**

Though it boasts of a variety of fish seen in abundance – this is a protected zone where fishing is prohibited. Patrol boats are strategically situated to check on encroachers according to Julius Ngeti – Tourism Warden Mombasa Marine Park.

"The locals depend on this for survival. We have locals hiring boats for tourists – and that earns them some income. The locals are also heavily involved in conservation – because any destruction to the park means disruption of their income.

"Outside this protected zone there are fishers and for sure the fish from here get that side and they cash it – to their advantage. More importantly government generates income for the benefit of the economy," added Ngeti.

Apart from people who come to appreciate biodiversity, others visit the park for diving and swimming because the beach is cleaner and attractive.

# Marine Park extols virtues of local community in conservation

Photo Credit | Carole Miyawa



Sanctuary: MESHAs team prepares to embark on a trip to Mombasa Marine Park last week.

By Allan Obiero | [allanjames86@gmail.com](mailto:allanjames86@gmail.com)

Community involvement in conservation has been hailed for its impact in the expansive Mombasa marine park, a warden at the Kenya Wildlife Service has said.

"They charge around Kshs 6500 (USD 65) for the boats that take people around something that instills a sense of ownership of the park and help us take care of it," Julius Ngeti, the Tourism Warden at the park said.

The park also known as "Allure of Beauty" lies between the Mtwapa and Tudor Creeks and its blue waters are ideal for wind surfing, water skiing, snorkeling and diving.

"The coral reef here at the park also provide a home to a colourful variety of marine species including crabs, starfish, stone fish, cucumbers sea urchins, corals and turtles as well as sea grasses in addition to interesting migratory birds including crab plover," he said.

While addressing participants at the Kenya Science Journalists Congress 2019 last week, Ngeti said that the Service has been working hand in hand with the local community to ensure that the park remained safeguarded and free of intruders.

Ngeti says KWS works closely with the local community to conserve the park by allowing locals to operate boats for ferrying tourists to generate income. This way, they become the guardians of the park because they accrue benefits from the resource.

Ngeti added that the park is well known for parties, picnics and weddings. Even as we seek to increase revenue collections from both local, regional and foreign tourists, we remain assured that our park's marine life remains intact hence visitors get value for money.

Droves of people are expected to visit Mombasa town and its environs to spend the long holiday, with KWS now positioning the park as a must-visit destination.

He added that they expect that such visits to the park and to the nearby coral reef will boost the revenue collections.

"On such peak seasons, the Park collects around Kshs 1 million (USD10,000) in a month and we expect the same this season," says Ngeti.

"Our rates are very affordable. Kenyan citizens only pay Kshs 130 (USD1.3) to visit the park while non-citizens pay Ksh 1,700 (USD17)," Ngeti noted.

He affirmed that the park is a no fishing zone and is under a 24-hour surveillance from KWS officers to deter poaching and improve security of visitors.



# From a barren wasteland to biodiversity hotspot



**Albert Musando of Lafarge Eco Systems explaining to journalists how the ecosystem works.**

**By Hazla Quire | [hazlaq@gmail.com](mailto:hazlaq@gmail.com)**

Once an eyesore and a wasteland of abandoned pits, the former quarries that were used for the mining of limestone for cement production are now teeming with wildlife and vegetation. They have since become a biodiversity hotspot at the Kenyan coast.

This transformation is due to the sound environmental management and rehabilitation effort by the Bamburi Cement, through the Lafarge Ecosystems initiative. This has resulted in the formation of the Haller Park – a diverse ecosystem of forests, grasslands and ponds.

The success of this effort involved the introduction of the red-legged millipedes. It played an important role in fertilizing the soil after feeding on the casuarinas tree species, which was introduced in the area.

Dr Albert Musando, the ecosystems and tourism manager of Lafarge Eco Systems, explained that it took five years, for the casuarina to start self-seeding and spreading across the surrounding area. By the time the trees started falling off, the 320 hectares of reclaimed quarry area was fully fertilized to allow new plants to grow and replenish. Wildlife was then introduced to create a perfect flora and fauna environment and now the once barren, ugly abandoned quarries were transformed into a green paradise with over thirty species of animals and 180 bird species in addition to insects that aid plant pollination.

The Park has since become a tourist attraction. This, at another level is an indication of what environmental management by industries can result into.

“The Haller Park story aims to allay long enduring concerns about industries destroying nature, because through the harmonization of nature and factory production,” said Nyinge Nyinge the ecotourism manager of Haller Park. He adds that this is what the future of heavy industries should be.

**Photo Credit | Hazla Quire**



**Industrial wastewater that has been purified and is now used in rearing fish at Haller Park in Bamburi.**

# Certified seeds to improve Kenya's maize yields



**Mainza Mugoya of TASAI: He urged journalists to contact his office whenever they needed data on the African seed sector.**

## Seed Companies

For instance, the number of breeders in Kenya for priority food crops is 34 in comparison to Egypt which has 74 and South Africa 54 and Tanzania 46.

Most breeders in Kenya are employed in public research institution such as Kenya Agricultural Livestock and Research Organization (KALRO).

However, some seed companies supplement the government efforts and have employed their own breeders.

Kenya has a vibrant seed companies with about 20 of them operating in the country.

Mr Mugoya was presenting a paper titled African Seed Access Index during the recent Kenya Science Journalists Congress in Mombasa which was attended by science journalists and experts from Kenya, Uganda, Tanzania, Rwanda and Malawi.

The congress held between November 18-20 was organised by the Media for Environment, Science, Health and Agriculture (MESHA).

"Breeding is critical as it responds to farming challenges, climate change, low yields and diseases among other challenges," said Mr Mugoya.

## Staple Food

Kenya was still recording a low maize production despite heavy focus on the staple food crop.

Other key food crops such as cow pea, sorghum, beans, soya beans and pigeon peas and rice have recoded under investment from the national government. By the end of 2017, a total of 314 maize varieties were released in Kenya with 43,954 tonnes sold to farmers.

In comparison, sorghum had 30 varieties, beans 31 and cowpeas 10 varieties released. To stamp out fake seeds which affects farmers' confidence and productivity in formal seed system, local companies introduced security labels in the packaging materials.

"Formal seed sector is moving towards liberalisation and we need to adopt a seed systems approach to address challenges in the African seed sector," concluded Mr Mugoya.

[https://www.nation.co.ke/business/seeds\\_of\\_gold/Improved-seeds-tipped-to-improve-Kenyas-maize-yields/2301238-5363868-num5wnz/index.html](https://www.nation.co.ke/business/seeds_of_gold/Improved-seeds-tipped-to-improve-Kenyas-maize-yields/2301238-5363868-num5wnz/index.html)

## New Technology

According to Mr Mainza Mugoya, Programme Coordinator, The African Seed Access Index (TASAI), Kenya and other African countries stand a chance to boost their yield if they adopt new technology.

"Improved seeds are resistant to pests and diseases. They adapt well to climate change and have improved nutritional value besides longer shelf life," said Mr Mugoya.

Records show that by 2017, Kenya had released about 98 varieties of maize seeds in a bid to respond to climate change.

The deadly fall armyworm is still ravaging maize crops in Kenya's food basket of South Rift Valley.

The official, however, said that even with improved seeds in the market, smallholder farmers were slow in adopting the seeds.

He said this is attributed to quality, affordability, accessibility and competitive seed systems serving smallholder farmers.

He said the low number of breeders in most African countries was also to blame.

**By Francis Mureithi | [mureithifrancis1964@gmail.com](mailto:mureithifrancis1964@gmail.com)**

**K**enya's average maize yield of 1.5 tonnes per hectare could match those of African leading producers of the crop if farmers use improved seeds.

The latest report by The African Seed Access Index (TASAI) indicates that Egypt, with a yield of 7.7 tonnes per hectare, leads the continent in maize production.

South Africa, with a yield of 6.4 tonnes per hectare, is the second largest producer of maize followed by Ethiopia with 3.7 tonnes per hectare.

Uganda, which has been exporting maize to Kenya, produces an average of 2.5 tonnes per hectare, while Malawi produces 2.0 tonnes per hectare.

Some of the African countries with poor yields include Mozambique with 0.9 tonnes per hectare, Rwanda (1.2) and Tanzania (1.5).



**Ms Lilian Mwhaki of KMFRI shows journalists a mangrove propagule which gives rise to a new mangrove tree. The journalists visited Gazi area in South Coast during a field visit by participants at the MESHA Congress 2019.**

# Carbon capture and storage by mangroves remain unmatched - Scientists

By Joyce Chimbi | [j.chimbi@gmail.com](mailto:j.chimbi@gmail.com)

**S**cientists want the government to exploit the full potential of mangrove forests to capture and store huge carbon stocks.

The experts, working mainly at the Kenya Marine and Fisheries Research Institute (KMFRI) at Gazi bay in Kwale County have indicated that mangrove forests in Kenya capture and store 1500 tons of carbon per hectare, which is eight to 10 times higher than carbon stored by their terrestrial forests. 'This carbon risks being released back into the atmosphere when mangroves are degraded or their area is converted for other land uses,' said Mwangi Ng'anga', a graduate student with KMFRI specializing in policy analysis of blue carbon.

"Blue carbon ecosystems such as mangroves can make important impacts to Kenya's Nationally Determined

**MESHA journalists walk through a mangroves forest: Experts say that blue carbon ecosystems such as mangroves can make important impacts to Kenya's Nationally Determined Contributions to the Paris Agreement.**



Contributions to the Paris Agreement which aims to make a 30 percent reduction in Greenhouse Gas emissions (GHGs) by 2030," Fredrick Mungai, a research assistant at the station says.

A mangrove is a tropical tree or shrub that grows in swampy areas along the

coast. KMFRI scientists estimate that there are 61,000 hectares of mangrove forests along the Kenyan coastline.

A country's Nationally Determined Contributions (NDCs) are revised every five years. Each successive NDC signifies a progression from the previous

one, representing the highest possible ambition. One of the principles to ensure enhanced ambition to these commitments over time includes the principle of 'no backsliding'.

Kenya's NDC is centered on low emission and climate resilient development pathway with ambitious mitigation targets. The NDCs identified mitigation options as well as key sector vulnerability and adaptation issues for agriculture, water, aquatic and marine resources, energy, health, and the social economic context in general. Under the forestry sector, establishment of forest cover of at least 10% has been identified as climate change mitigation measure.

## Blue carbon and Paris

Mungai noted that despite the immense capacity that mangroves have to drastically reduce carbon emission; Kenya is yet to include blue carbon ecosystems in its NDCs. By not including mangroves and associated blue carbon ecosystems in the NDCs, Kenya may be under or over-estimating its GHG emissions.

"There is therefore a great opportunity to influence this policy decision so that mangroves and associated blue carbon ecosystems can be included in periodic NDCs revisions. It is all about using blue carbon in realizing Kenya's commitments to Paris Agreement," argues Lilian Mwhiki, a PhD research student specializing in mangrove and climate change at Edinburgh Napier University.

Mwhiki is currently undertaking research at KMFRI Gazi field station, which one of 10 such stations across the country. She says that for blue carbon ecosystems such as mangroves to be fully exploited, mangrove restoration projects such as those on going in Kwale and Lamu counties must gain significant momentum.

"More than 60 percent of mangrove forests in Kenya occur in Lamu County, followed by Kwale and Kilifi at 14 percent each, followed by Mombasa at six percent and finally Tana River County at five percent," she says. Adding that "Mangroves need fresh water and that is why they



**Fast-disappearing mangrove forests are key to the survival of coastal communities. Here officers show journalists how they transplant them.**



**Journalists are shown aspects of what happens to mangrove trees.**

can be found in these areas which have fresh water input from rivers."

Abel Kiprono, also based at Gazi station, decries the fact that mangroves are over-exploited because they are preferred as a source of wood products and energy.

## Gains and losses

As a result, during the 1990 to 2019 period, there were gains and losses recorded in Lamu mangroves. Losses were associated with the mangroves occurring very close to high dense human settlements in Nda, Faza, Kizingitini, and Mkunubi

This notwithstanding, Kiprono says that there is increasing awareness among local communities on the benefit of the mangroves.

Incentive schemes can be used to support mangrove conservation across the country. For instance in Kwale County, the community at Gazi are benefiting from sale of mangrove carbon credits. Mikoko Pamoja initiative in Gazi is protecting 117ha of mangroves that generate an annual income of Ksh. 1.5million (USD10,500) from sale of about 3000tons of carbon credits.

The income from carbon is used to support local development projects in water and sanitation, health, education and environmental conservation. Similar initiative is being replicated in Vanga, also in Kwale county.

As these benefits continue to increase consistently, researchers are convinced that it is only a matter of time before mangroves define the very heart of the country's commitments to the Paris Agreement.

# Insect attacks threaten survival of mangrove forests

Photo Credit | MESHA



Mangrove vegetation at Gazi Bay, Mswambweni in Kwale County.

By Faith Mwafulirwa | [faithmwafulirwa@gmail.com](mailto:faithmwafulirwa@gmail.com)

**M**angroves in Kenya are now facing a new natural threat, pest infestation. One of the mangrove species that occurs as a thin line along the coast, *Sonneratia alba*, is most affected. According to Elisha Mrabu, a scientist at Kenya Marine and Fisheries Research Institute, *Sonneratia alba* has been observed to be infested by moths and beetle and spreading from north to the south along the coast for the past ten to twelve years. The infestation is causing the trees to die off starting from the top downwards.

He added that it is important study this infestation by insects with keen interest with the reported issues of climate change, particularly sea-level rise. Mangroves are expected to be submerged for longer periods of time with increasing sea levels.

This would cause the mangroves species, *Sonneratia alba*, to cover larger areas of the mangrove forests, thus larger infestation areas.

“The problem we have now is that currently the infestation now targets other species of mangroves and it’s a big problem as these may not have the immunity to fight as that *Sonneratia alba* has been observed to have been building.

He further said that a current study has shown how exactly the plant fights back the infestation on its own and as scientists and they are working on how to enhance the ability on the plant to fight back hard.

Lilian Mwihaiki, a mangrove ecologist and a PhD student at Edinburgh Napier University concurred with Mrabu saying it is

important to carry out sensitization on river pollution saying that mangrove trees depend on the fresh water input to do well. Unfortunately the rivers feeding into these forests are highly polluted from upstream or highly abstracted thus posing a challenge for the trees to enhance their immunity in fighting insect infestation.

“We have a chance of a bright future ahead in as far as retaining our environment is concerned, taking good care of mangrove forests for example, would help mitigate against climate change as they have the capacity to store huge amounts of carbon, but are also potential emitters when degraded, so it is really important to work towards protecting the mangrove forests from infestation,” she said.

# Blue economy: An allure to greater fortunes in Kenya

By Joyce Chimbi | [j.chimbi@gmail.com](mailto:j.chimbi@gmail.com)

**K**enya is increasingly embracing the blue economy for its potential to address pressing needs such as extreme poverty, hunger and acceleration of sustainable development.

Concerns are however rife that the full economic potential of marine resources has not been exploited.

According to the Kenya Institute for Public Policy Research and Analysis (KIPPRA), the country has a maritime territory of 230,000 square kilometers and a distance of 200 nautical miles offshore, which is equivalent to 31 of its 47 counties.

"The blue economy is not a new phenomenon. It has always been here with us. What is new is the scale of the blue economy in Kenya," says Dr Jacqueline Uku, senior scientist at the Kenya Marine & Fisheries Research Institute (KEMFRI).

Dr Uku explains that blue economy is about exploiting resources such as the oceans, lakes, rivers and other bodies of water. "A fisherman on a canoe, fishing and trading his day's catch is part of the blue economy," she adds.

She further says that blue economy activities include harvesting of living resources such as sea food, extraction of non-living resources such as seabed mining, and generation of new resources such as energy and fresh water.

"We need also to think of the sea weed businesses as well as agro-processing activities, to support the economy of the country," she said, adding that Kenya's energy and mining sectors are also hugely expected to utilize the marine potentials.

As the country's maritime business activities are still in their infant stages, it goes without saying that the country needs to strengthen its blue economy sector.

Dr Uku underlined the fact that Kenya's culture of utilizing maritime resources is still weak. For example, she said that the Kenyan per capita consumption of fish is only 4.5 kilos per year while the global consumption stands at 20 kilos per year.



**Dr Jacqueline Uku, senior scientist Kenya Marine & Fisheries Research Institute.**

At another level, the country has not developed its coastal tourism sector, artisanal fishery, aquaculture and the like.

Research by the International Energy Agency shows that ocean renewable energy has a power potential sufficient to provide up to 400 percent of global current energy demand.

Within this context, marine experts are further confident that paying more attention to exploits of the blue economy can significantly enable Kenya to improve its volumes of global trade.

"Kenya's share of the region's blue economy is 20 percent. Approximately, 93 percent of this share is within the tourism sector and this means that there are many other sectors that have not been explored," she says.

Beside the much lucrative global trade, the blue economy can also improve the country's capacity to achieve food security.

But Kenya is not the only country exploring its prospects. Other African countries such as South Africa are already reaping big from it.

Research by the United Nations Development Programme shows that at least 70 percent of African countries are

either coastal or islands, consequently, marine experts emphasize that there is need to harness such valuable coastlines.

Additionally, Africa is the largest island on earth as it has the Atlantic Ocean on the West, Indian Ocean on the East, Southern Oceans on the South, Mediterranean and Red Sea on the North.

Africa's coastline is about 31,000 kilometres and yet trade among African countries accounts for a mere 11 percent of the total trade volume which is the lowest compared to ASEAN, Europe and America's coastlines.

Unfortunately, there is very little shipping going on in Africa. African owned ships account for less than 1.2 percent of the world's tally.

Fortunately, Kenya is among African countries that are developing strategies to mainstream the blue economy within its national economic blueprint.

"We want to scale up and think bigger. We want to move from the small fishing boats to a bigger industrial fleet, from the beach trader to a bigger global sphere," Dr Uku concludes.

*Additional reporting by Mekonnen Teshome | [mokish03@gmail.com](mailto:mokish03@gmail.com)*

# Third Kenya Science Journalists Congress 2019 in Photos



The Deputy Director in charge of Freshwater Systems, Dr Enock Wakwabi, while giving his remarks at the opening ceremony of the Third Kenya Science Journalists Congress on behalf of the Director of KMFRI. He urged journalists to highlight the work that the research institute does in undertaking research in “marine and freshwater fisheries, aquaculture, environmental and ecological studies, and marine research including chemical and physical oceanography.” He was representing his director, Prof James Njiru. The deputy director added that Mikoko Pamoja, based in Gazi Bay, is the first community type project in the world to restore and protect mangroves through sale of carbon credits. Success of Mikoko Pamoja made institute win the coveted UN’s Equator Prize in 2017 as a blue solution to climate change challenges.



**MESHA CHAIR SPEAKS:** Basing welcome remarks on the no human is limited motto, MESHA chair, Violet Otindo said that science journalists associations should up their games because just like humans, no association is limited. She urged MESHA members to maintain their integrity and keep the warmth and confidence that the association is slowly beginning to see in their engagements with scientists.



Ms Anita Chepkoech, a science reporter from the Daily Nation at the event.



Mr Bozo Jenje and MESHA chair are all ears to a presentation being made at the showpiece.

# Third Kenya Science Journalists Congress 2019 in Photos



**Eng Sylus Openji:** He told journalists that Water Fund aims at ending drought emergencies, climate proofed infrastructure for improved water supply and sanitation in arid and semi-arid areas. He added that water fund, cites increased salinity of brackish surface water resources.



**Kioko Kivandi,** a radio expert from Egerton University follows the proceedings keenly.



**Barrack Okoba of FAO:** He said that the seed sector in Africa is dominated by foreign investors and it was time more local investors came on board.



**Journalists Dominic Mwambui and Jeremiah Orondo** side by side take in the science.



# Third Kenya Science Journalists Congress 2019 in Photos



**Philip Muasya, Chapter leader Kitui County as captured in the Congress.**



**Journalists Margaret Matunda and Ms Lucy Mkanyika follow the proceedings keenly.**



**Ms Cynthia Mauncho a communication officer at KEMRI Wellcome.**



**Aggrey Omboki makes a contribution during the meeting**



**Cromwel Busolo of Nairobi University giving his remarks at the Third Kenya Science Journalists Congress.**

# Third Kenya Science Journalists Congress 2019 in Photos



**Paul Sarwatt, senior journalist from Tanzania's Raia Mwema newspaper quets his thirst in Mombasa.**



**A journalist from Mombasa makes a contribution at the Congress during the science cafe.**



**Christine Nguku of Media Council of Kenya: She asked journalists to think about reasons science is not clearly understood even when they do their pieces in the simplest languages. She told them to ask critical questions that respond to the needs of the society.**



**Ms Consolata Opiyo, a HIV advocate said that at all costs people should protect themselves against acquiring HIV noting that taking drugs lifelong is never a walk in the park.**



**Vivian Abaga of HEJNU, Uganda makes a point at the Congress.**

# Third Kenya Science Journalists Congress 2019 in Photos



Vice chairman of MESH, Allan Obiero of Radio Ramogi consults the secretary just to make sure things move smoothly at the fete. Mr Obiero led the members in posting over 500 tweets at the Congress.



Victor Bwire of the Media Council of Kenya said that the new curriculum on climate change would be useful to all science journalists in Africa. He urged media associations like MEatraining members.



A Rwandese participant, Ms Janat Twahirwa absorbing the science being communicated at the event.



Subramanian Sevgan of *icipe*: He said that globally over 2 billion people consume more than 1900 edible insect. In Africa, he noted that there are nearly 500 of such species. He noted that feed production must increase by 70% to be able to meet the global demand in 2050. He said that experts at *icipe* estimate that 90,000 tonnes of dry insect is required to replace fishmeal in Kenya with a potential of injecting 14,000 jobs per year. He added that the country needed 5 to 10 years to reach the threshold of commercializing insects production.



Ms Faith Mwfulirwa from Malawi is all ears to the speaker of the moment.

## Third Kenya Science Journalists Congress 2019 in Photos



**Sarah Natoolo, a broadcaster from Uganda and her colleague from Tanzania, Upendo Mosha caught on cameras at the Congress.**



**Aghan Daniel of AFSTA: at the AGM held alongside the Congress: He said that the MESHA leadership had delivered to the members a memorable congress and challenged journalists to use the meeting as a gold mine for science stories.**



**Mr Mekonnen Teshome of Ethiopia: He said that it was impressive that MESHA has continuously brought African science journalists and scientists together for the past ten years.**



**David Omwoyo of Media Council of Kenya asked journalists to pay attention to climate change reporting.**

# World Staring at a Climate Catastrophe, UN report warns

By Joyce Chimbi | j.chimbi@gmail.com

Scientists on the United Nations Intergovernmental Panel on Climate Change (IPCC) have revealed in a Special Report on Climate Change and Land that the world is staring at a climate catastrophe.

IPCC is the world body for assessing the state of scientific knowledge related to climate change, its impacts and potential future risks, and possible response options.

This major United Nations report released in Geneva, Switzerland this past August, explored how land use and management contributes to climate change and how climate change affects land.

It is a report that rings true across Africa where rapid deforestation continues and extreme climatic changes have taken effect.

"IPCC's report focuses on the link between global warming and land use. At the core of this report is the nexus between climate change and unsustainable land use including unsustainable global food systems," says Richard Munang, the Sub-Programme Coordinator on climate change at UN Environment - Africa Office.

Munang says that this nexus "is already coming to the fore in Africa especially now that the continent is losing forest cover at a rate that is much higher than the global average."

In Kenya for instance, during the first two months of this year, at least 114 forest fires were recorded across Kenya with at least five major forests being adversely affected, according to Kenya Forest Service.

In just a matter of days in February, a wild fire ravaged an estimated 80,000 acres of Mount Kenya's forest moorlands.

Forest and wildlife experts are adamant that communities living around these forested areas are responsible for the fires. And yet deforestation is one of the major drivers of climate change, according to a new report.

According to the report, land is a critical resource and also part of the solution to climate change.



**Richard Munang, the Sub-Programme Coordinator on climate change at UN Environment - Africa Office.**

However, as more land becomes degraded, it becomes less productive and at the same time reducing the soil's ability to absorb carbon. This in turn exacerbates climate change.

That burning forest vegetation attracts rainfall is a long held belief among communities living around major forests in various parts of Africa, raises alarm that if such misconceptions continue, the continent is on track towards a catastrophe.

According to the report, satellite observations have shown promising vegetable greening in parts of the world, including Asia and South America, and more vegetable browning in some parts of Africa particularly the Central Africa's Congo basin. This has been attributed to water stresses due to lack of sufficient water.

Within this context, Munang further explained that globally, Africa bears the second highest cost of land degradation estimated at 65 billion dollars per year and that this has put a strain on economic growth.

“While average losses resulting from land degradation in most countries are estimated at nine percent of Gross Domestic Product (GDP), some of the worst afflicted countries are in Africa and lose a staggering 40 percent of their GDP,” he expounded.

Co-authored by 107 scientists, almost half of whom are from developing nations and 40 percent of whom are female, the report resoundingly places land management at the very centre of the raging war to combat climate change, stating that effective strategies to address global warming must place sustainable land use systems at their core.

“Last year the United Nations Development Program indicated that Africa’s urban transition is unprecedented in terms of scale and speed and that the continent is 40 per cent urban today,” says Dr Wilfred , a lecturer in natural resources at the University of Nairobi.

IPCC report emphasizes that while climate change in itself can increase land degradation through increases in rainfall intensity, flooding, drought intensity, heat stress and dry spells, it is land management practices that has tipped the balance.

“Food security will be increasingly affected by future climate change through yield declines – especially in the tropics – increased prices, reduced nutrient quality, and supply chain disruptions,” said Priyadarshi Shukla, Co-Chair of IPCC Working Group III in a statement.

“We will see different effects in different countries, but there will be more drastic impacts on low-income countries in Africa, Asia, Latin America and the Caribbean,” he said.

Experts are therefore adamant that a lot needs to be done to heal damaged land. As the situation stands, researchers hold the position that the world is heading straight into a climate disaster.

The report has extensively highlighted how damaged land is no longer serving as that large sink that absorbs harmful carbon dioxide emissions.

As a result of significant land use changes, grazing pressures and substantial reduction in soil fertility, UN researchers now say that one-third of total carbon emissions come from land.

“Land is under a huge amount of pressure and we are increasingly witnessing how human-induced environmental changes contribute to catastrophic carbon emissions,” says Dr Subbo.



**Dr James Kairo of Kenya Marine and Fisheries Research Institute, Mombasa.**

Last year, the Institute for Agriculture and Trade Policy and GRAIN conducted an analysis of the planet’s 35 largest meat and dairy companies. Their report concluded that meat and dairy companies will surpass oil industry as biggest polluters.

Munang nonetheless points out that all is not lost. “Over 90 percent of countries in Africa have ratified their commitments to accelerate climate action towards achieving the 2015 Paris agreement,” he emphasizes.

This agreement seeks to achieve a sustainable low carbon future. Munang emphasizes that such climate goals calls for countries to embrace ambitious ecosystem friendly techniques such as agro-forestry, use of organic fertilizer and clean energy.

He says that a number of African countries are on track. “Ethiopia has done very well and set a new unofficial world record of planting over 350 million trees in just 12 hours,” he says.

Kenya targets to run entirely on green energy by 2020 and is on record as having the largest wind farm in Africa,

as is Morocco with the largest solar farm in the world.

“The key going forward is to change perspective and to look at these actions within the broader goal of building globally competitive enterprises with climate action co-benefits,” Munang concludes.

**This agreement seeks to achieve a sustainable low carbon future. Munang emphasizes that such climate goals calls for countries to embrace ambitious ecosystem friendly techniques such as agro-forestry, use of organic fertilizer and clean energy.**



Dr Paul Ngaruiya is captured at the Congress making a presentation on the need to regulate pesticide use.

# Report pesticide use responsibly, journalists urged

By Christine Ochogo | [christawine@gmail.com](mailto:christawine@gmail.com)

Experts have urged journalists to report responsibly on the use of pesticides in Africa.

While addressing science journalists from Kenya, Uganda, Tanzania, Rwanda Ethiopia and Malawi gathered in Mombasa last week, Dr Paul Ngaruiya and Dr Dorah Kilalo noted that media have been made to believe that pesticides are only harmful to human beings.

Dr Ngaruiya who works at the Pest Control Products Board said that every government has an obligation to ensure the safety of its citizens, animals, plants and the environment and would never allow anything that harms its citizens to be sold by merchants.

He reminded the journalists that the primary purpose of using pesticides is to control pests in crops and animals in order to reduce yield losses. He noted that science writers must be aware of the fact that there is possibility of ineffective products of egg counterfeits.

This, he observed calls for strict risk assessment, management and mitigation to ensure human and environmental protection. He said that the Kenya government is vigilant on any pesticides that might harm her people and so were the governments from the region. He pointed out that internationally, States are governed by various international instruments to which African governments have adhered to. He urged journalists to interrogate these instruments and if in doubt of any lapse by the government, report such cases to the Board.

On her part, Dr Kilalo said that whereas pesticides are not manufactured in Africa, governments in the region have stringent laws that govern them. She said that though all African countries import pesticides, science has been the measure used by governments to allow the commodities reach the shelves. In

Africa, only South Africa has the capacity to do so but they do not manufacture them to a large extent. Since the introduction of pesticides in Africa, she noted, the quantities used have continued to increase.

Africa she said accounts for only 2-4% of the global pesticide market of about \$ 40 billion and the continent uses the least active per hectare < 2kg a.i/ha compared to 7 and 3 in Latin America and Asia.

She urged journalists to be on the look-out for improper use of pesticides which she said has been responsible for negative effects on non-target organisms, such as fish, birds, beneficial organisms such as bees, earthworms and plants and on human beings.

The two experts said that the choice of pesticides depends on farmers' perception of their efficacy on pests, type and intensity of pests, crops growth stage and availability of pests, crops growth and the availability of pesticide.



An old excavation machine used for mining coral limestone. It now serves as a historic monument at Haller Park.

# Rare Star Tortoise Finds Home in Former Cement Quarry



By Clifford Akumu | [akumu.clifford@gmail.com](mailto:akumu.clifford@gmail.com)

**T**he most confiscated tortoise species in the world has found refuge at a restored cement quarry in Bamburi at the Kenyan coast.

The Star tortoise is a rare freshwater species according to the wildlife trade watchdog TRAFFIC. It is classified as vulnerable on the International Union for Conservation (IUCN) Red List of Threatened Species.

Increased habitat loss, illegal collection for the international wildlife trade and the long reproductive cycles are some of the challenges facing the species.

These factors according to experts make it almost certain that populations in the wild are shrinking at an alarming rate.

But there is hope in the conservation of the tortoise—an endangered through biodiversity conservation.

“In essence, we are giving nature a helping hand,” said Dr Msando adding that the aim of the project is to restore indigenous coastal forests in the quarries to support conservation of local biodiversity.

The rare star tortoise is the most confiscated species of freshwater tortoise in the world, according to the wildlife trade watchdog TRAFFIC. The species and its conservations, says Msando, is critical in raising the numbers.

Bamburi quarry rehabilitation program started in 1971 by Rene Haller-A Swiss agronomist. About 320ha is now teeming with biodiversity.

The rehabilitated sites now offer refuge to some rare and endangered species that roam the protected area freely.

“We only have a single tortoise of this species in the park. And as an extension conservation initiative we are monitoring its movement and studying its interaction with other species to study the ecosystem,” he added.

Apart from restoring the once “ugly scar on a beautiful environment,” says Msando, the project has morphed into an ecosystem conservation monument promoting ecotourism and environmental sustainability.

“Educating the younger generation on environmental issues is key in cultivating a culture campaign, geared towards awareness creation and mindset change,” he says.

The park is now receiving visitors from all walks of life, with a total of 187,000 individuals visiting the park last year. A modest fee of between Ksh100-200 is charged to locals and Ksh250-300 to international visitors.



# Third Kenya Science Journalists Congress 2019 in Photos



Senior Communication Officer at Nacosti, Ms Mildred Mugambi expresses delight during one of the sessions.



Active participation.



Paullette Kemunto of Water Fund during one of the sessions



Ministry of Environment's Njeru Ngare and Mr Isaiah Maina represented the ministry at the Congress.