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Africa's fisheries on the brink of collapse



In this issue

**How Open Defecation
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**Lack of Medical Oxygen
and Its Impact On Children**

**Beans that cook in 15
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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. It does so by offering training workshops, consultancies and encouraging 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.

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10

Agriculture

How Obscure Herb Transformed A Farmer's Fortune In Kenya



15

Conservation

Wool Crafting Saving Last Crop of Bird Species Only Found in Kenya



22

Health

Meet The Man Who Has Dedicated His Life To Fight For Adequate Oxygen For Infants



24

Health

African countries urged to be vigilant amid spread of Zika virus



28

Nutrition

Munching Nutrient Packed Stink Pose To Supplement Diets



30

Partners Corner:

Gertrude Children's Hospital Launch Children Hearing Screening Program

Time to decentralize waste water management in Africa

The fate of human waste is intimately bound up with that of our water resources: in an urban environment dominated by the flush toilet, each of us uses between 6 and 13 litres of water every time we use the toilet – push the handle and it's out of sight, out of mind. But where does it go to? In many of our urban centres, it ends up, by choice or by accident, discharging into a river, lake or ocean, contaminating precious resources.

According to the United Nations, 1.8 billion people worldwide get their drinking water from a source that is contaminated with faeces.

The waste and contamination of precious water seem insane in a continent currently immersed massive messes in the water sector.

Take the case of Ethiopia which is currently contending with one of the most serious climatic shocks in recorded history with ten million people facing lost harvests and livestock as well as severe water shortages and health risks.

About 14 million people face hunger in Southern Africa. The worst affected in the region by last year's poor rains are Malawi with 2.8 million people facing hunger. Madagascar has nearly 1.9 million at risk of hunger, and Zimbabwe, 1.5 million where last year's harvest was reduced by half compared with the previous year because of massive crop failure according to the World Food Programme.

In March this year, Dr Suresh Kumar Rohilla of the Centre for Science and the Environment (CSE) in New Delhi said, "Around 75% of the world is water-scarce and that's a good reason to take sanitation very seriously." Dr. Rohilla and other Experts were addressing journalists from Africa in Accra, Ghana.

According to Dr Rohilla only 20% of our water is consumed. The rest is wastewater. 80% of the water used leaves the home as sewage.

To effectively decentralise waste water treatment, experts say that the issue must be made a local one, with much smaller treatment plants serving a suburb, a school, a clinic, or any other natural group of users.

Decentralising waste water management is economical: less water pipes to carry the waste mean less leaks and less demand for water. Water authorities must hence opt for projects which use a smart combination of natural processes, filtering waste through biodigesters and gravels and using the cleansing power of plants to 'scrub' the waste and produce precious water, which can then be recycled for irrigation for crops or gardens, or for other uses, for example in industry.

Sadly, many authorities in Africa and around the world are yet to grapple with this fact. Many still plan for a future with centralised sewerage systems – as is the case in Siaya County in Kenya and other parts of Africa, where governments are rolling out massive projects. But given that it is expected to serve only about 50,000 households, the Siaya County government will struggle to keep up with a rapidly growing population and dwindling water resources - barely enough to consume, let alone to wash away waste. Reverting to a decentralised sewage system appears to be a natural fit for many of our countries, as we face a water-scarce future. It is our hope that sanitation is going to rise from the shadows of taboo in which it has lingered for so long, and become a hot topic for journalists to cover.

Mandi Smallhorne

President, African Federation of
Science Journalists



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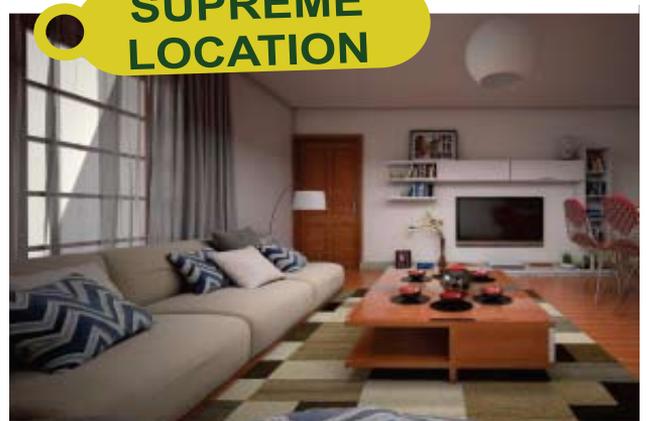
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Africa's fisheries on the brink of collapse

Fishers have to go 30 kilometres off shore to catch any fish. Even with the best net, the fish caught is not enough

By Zeynab Wandati, Special Correspondent | zwandati@gmail.com

The best net is the one that catches the most fish. The words come out of his lips easily, in a low and steady voice that almost drifts away with the wind. His mouth curves upwards forming a smile but it is a dry and emotionless smile that doesn't reach his eyes. He looks out into the ocean beyond, where several fishing boats are just dots in the horizon.

All these boats you see here ..." he waves his hand lazily towards the row of boats on the beach "... the nets come back empty most times. Is my net bad or is there no fish?" He spits again and mutters something in his

mother tongue. He closes his eyes for a few minutes, listening to the ocean winds then quickly turns around and walks away from the water.

His name is Kofi Nyamegbe. He is among the 25,000 people who live in the fishing village of Moree, in Ghana's Cape Coast region, roughly 120 kilometres from Accra. He has been a fisherman for the last eight years, he says, and everyday he watches with despair as the nets he casts bring back barely enough fish to sustain his family.

"We have to go 30 kilometres off shore if we are to catch any fish. But even with the best net, the fish we catch is not enough."

Moree is believed to be Ghana's first fishing community, dating back several centuries. But despite the years, the village hasn't grown much. The fishing industry in this village and most other fishing communities in Ghana is organised in such a way that it is headed by a chief fisherman.

"We have fished so hard that there is no more fish in the sea," says Nana Farnyi Kweigya, Moree's chief fisherman. "And even the little fish that is there, is being blown out of the water. Literally. Fishermen have become so desperate that they use dynamites and other explosives in order to catch fish."

Photo | Christine Ochogo

Kweigya who is almost 60 years old speaks impeccable English. He learnt to fish when he was eight years old, he says, in neighbouring Guinea. Now he is the seventh chief fisherman of Moree, a job he says is not easy especially when there is no fish to catch.

"We have 829 fishermen for every one kilometre of beach front. That's a lot of boats. All of them competing for the few fish. That only makes the situation worse."

Ghana's coastline is about 500 kilometres long, providing employment to at least 10% of the population. Exactly how much fish is caught in Ghanaian waters is not really known, but Ghana is said to be the highest fish consuming country in Africa and the fifth in the world – with a per capita consumption of 26 kilos annually, against a global average of 10 – 19 kilos. Kenya and the rest of East Africa has an estimated consumption of just three kilos per person, per year.

"In Moree, we have 7 landing beaches where we receive the fish," Kweigya says. "Fish is our life. It is all we know."

In the 1998/99 fishing season, Ghana had its highest ever harvest of fish of 200,000 tonnes. Today, the catches barely hit 10% of that. This, according to marine biologists, is a disaster.

"When your fish harvest is only 10% of what was your highest harvest, it means that your fish stocks are collapsing. This is where Ghana is right now. Some fishermen are even using toxic chemicals to fish which harm the oceans even more," says Kofi Agbogah, a fisheries conservationist.

The global marine fishing industry is estimated to be worth over 100 billion dollars annually, producing 67 million tonnes of fish, making fish the most traded agricultural commodity worldwide.

In Africa, the continent's coastal waters only produce 4.6 million tonnes of fish annually, valued at 4.9



billion dollars – which is 1.3% of the continent's GDP.

However, 52% of these fish stocks are already fully exploited, 8% is fully depleted and 19% over-exploited. Only 20% of the fish stocks are believed to be under-exploited, while 1% is recovering from depletion.

The East African coastline lies within the 20% that is under-exploited. Kenya for instance only harvests 50,000 metric tonnes of fish annually, most of which comes from inland water sources and aquaculture. Only 4% of this harvest is from the ocean.

One key factor that has led to the near collapse of the continent's fisheries is the illegal, unregulated and unreported fishing, which costs the continent billions of dollars in lost revenue. Although it is quite difficult to say exactly how much money is lost as a result, illegal fish catches are believed to be worth anywhere between 10 and 23.5 billion dollars annually, representing 11-26 million tonnes of sea food.

The West African coast is said to be the most affected by illegal fishing activities, with 40% of total catches considered illegal. Kenya's coast has become quite vulnerable in recent years, especially when it comes to tuna fish. The Kenyan government reports that the country loses at least

118 million dollars annually due to illegal fishing and fish poaching.

Marine biologists warn that the amount lost may be double what is currently in the books, because given the secretive nature of illegal fishing activities, most of it goes unreported.

Tuna is one of the most illegally caught fish in the world, with an estimated 7 million tonnes caught globally, valued at 10 billion US dollars. Most of it comes from the Indian Ocean, which produces 24% of the total catches. Kenya's territorial waters lie within the South West Indian Ocean, the richest tuna belt, with the fishing season running from May to July.

Although Africa often cries foul over illegal fishing, a number of conservationists believe that governments are in on the illegal activities, such that every time an illegal vessel is arrested off the African coast, it is quickly let go without any charges. This happens mostly where Chinese and European Union vessels are concerned. Chinese vessels are the most notorious when it comes to illegal fishing, thriving on Africa's inability to patrol and secure its waters.

Kenya has licensed between 34 and 40 purse seiners in the last four years to fish in its waters.

Photo | Christine Ochogo



Of these around 14 are Spanish and up to 13 are French - although five of these until 2013 were previously registered to Mayotte. In 2014 - the last year where a full year of data is available - 35 foreign purse seiners took annual licenses. Twenty five of these were from the European Union.

Between 2007 and 2013, no foreign longline vessels were licensed to fish in Kenya's waters, mostly due to the threat of piracy. Before 2007, foreign longline vessels flagged to Japan, Chinese Taipei and Republic of Korea fished in Kenya's waters. In 2013, eleven longline vessels were licensed to fish, and five in 2014.

Kenya requires reporting as a condition of a license for foreign vessels operating in its territorial waters. Reporting involves specifying the cargo on board, time and entry or exit position. Kenya requires weekly catch data reports to be submitted, but there are concerns that the reporting is not done accurately, purposefully concealing illegal activities in the Kenyan waters.

Tanzania has licenced between 18 and 38 purse seiners to fish annually in their EEZ in the last six years. Of these around 14 are Spanish and 13 French.

From 2011 to 2012 no foreign longline vessels were licensed to fish in Tanzania's EEZ, this was initially attributed to the threat of piracy but later it emerged that there was a fraudulent network selling false licences to vessels in the fleet linked to Taiwanese ownership.

Payment of these licences is done per tonne of fish caught. In Kenya's case, payment of royalties of fish caught in Kenya's EEZ is stipulated in the Fisheries Act, but the method of calculation is not specified. This lack of specifications is seen as loophole through which revenue leaks. Between 2012 and 2014 purse seiners were charged 50,000 US dollars for a license, a fee that has now reduced to 30,000 US dollars. Kenya says the reduction is intended to make Kenya competitive in light of the piracy threat.

Even though Kenya lacks the capacity to fully exploit its territorial waters, a recent study conducted by WWF Kenya indicates that fish populations have declined by 49% between 1970 and 2012. The analysis tracked 5,829 populations of 1,234 species, making the data sets almost twice as large as past studies - giving a clearer,

more troubling picture of ocean health.

The report also shows a steep decline in coral reefs, mangroves and sea grasses that support fish species. More than one-third of the fish tracked in the study rely on coral reefs, and following the decline of the reef, the fish numbers also declined by 34% between 1979 and 2010.

Research shows that coral reefs could be lost across the globe by 2050 as a result of climate change. With over 25% of all marine species living in coral reefs and about 850 million people directly benefiting from their economic, social and cultural services, the loss of coral reefs would be a catastrophic extinction with dramatic consequences on communities.

While over-exploitation is identified as the major threat to ocean biodiversity, climate change is causing the ocean to change more rapidly than at any other point in millions of years. Rising temperatures and increasing acidity levels aggravate the negative impacts of overfishing and other major threats including habitat degradation and pollution.

"The question that every fisherman wants answered is where have all the fish gone?" says Wisdom Akpalu, a professor of Economics at the University of Ghana. "What the fisherman fails to realise is that he too is responsible for what has happened to the fish. Every time he uses an explosive, he pollutes the water and destroys the fish habitat."

"We are not fools," says Nyamegbe. "We are educated. We know that we need to conserve the fish because it is our life. I don't use explosives but I see other fishermen use them. I see how their skin changes the colour because of the toxic chemicals they use to fish. I have seen women and children get sick after handling the contaminated fish," he pauses for a moment and looks out into the water.

Photo | Christine Ochogo



“I want my government to do better than to blame me for the fish collapse. If they can’t save our livelihoods, let them empower us to save ourselves. Let them buy us boats so that we can deal with those who are stealing and killing our fish.”

A number of African governments have made a few strides towards saving their fishing industries. Before 2000, the Ghanaian fisheries department was only interested in ensuring that the fishermen caught the most fish, hence the phrase ‘the best net is the one that catches the most fish’. But this only gave rise to fish for all kinds of regime, which brought more problems.

So in 2015, the Ministry of Food and Agriculture started registering the fishermen with the intention of ensuring that they each acquired a licence to fish. But this isn’t working out well, because most of the fishermen are small scale and therefore difficult to track down. But through the village chief fishermen, the government has been able to reach out to the fishing communities and carried out several training sessions on sustainable fishing practices.

There was also a plan to regulate the kind of nets the fishermen can use so that the wrong species of fish are not caught, but that is a plan that has been shelved, because the kind of fishing gear that the fishermen use is linked to their tribes and cultural practices, and therefore outlawing one gear would disadvantage an entire community.

In 2014 Kenya launched a Tuna Fisheries Development and Management Strategy, which is intended to enable Kenya exploit its tuna stocks. The only tuna fish processing plant in East and Southern Africa was in Mombasa and it shut down in June last year because of idle capacity. The country has acquired a fisheries research vessel – RV Mtafiti – which will enable Kenya to carry out proper marine stocks to enable to country know its exact wealth in the oceans. So far the vessel has carried out two research voyages.

The country has also started the construction of a world class fisheries laboratory that will check the quality of all the fish produced by Kenya, both inland and marine.

Tanzania on the other hand has amended the Tanzania Deep Sea Fishing Authority Regulations in line with the Maputo Declaration, which not only enables it keep better track of its fish, but also better manage its fish stocks.

With fish being big player in the global economy, the World Trade Organization issued a ministerial statement on fisheries last year to scrap out fishing subsidies, because they contribute to the over-exploitation of fish resources. The ministerial was signed by 29 countries in the least developed regions of the world.

The statement argued that the fisheries sector plays a crucial role in ensuring food security in landlocked countries, but the subsidies in the sector create serious distortions in global fish markets, impacting on food security and livelihoods.

In order to save the oceans, marine biologists suggest that governments need to consider setting quotas and limits of how much fish can be caught at any given time as well as protecting fish breeding grounds. Governments will also need to ensure that fish catches are accurately reported and labelled, because a global study has shown that that most fish trading in the market is labelled as something it isn’t. Fifty nine per cent of tuna being sold for instance is labelled as tuna but it really is not tuna.

With the current dwindling fish stocks, the world can only manage to feed 450 million people a day. But if over fishing is stopped, the number rises to 700 million people a day.

Saving oceans require that Governments need to consider setting quotas and limits of how much fish can be caught at any given time.

Rare herb spices up young farmer's life



By Clifford Akumu, Staff Writer | akumu.clifford@gmail.com

Fenugreek (*trigonella foemon-graecum*) a herb that has long been used by healers for its medicinal properties is indeed a rarity in Africa.

India exported 8,93,920 tonnes of spices and spice products valued at Sh 249 billion (USD 2.5 billion) between 2014 and 2015.

Chilli, mint products, cumin, coriander, curry powder and fenugreek contributed substantially to the spice export basket.

In 2013 the EU imported some 533,000 tonnes of spices and herbs valued at € 1.9 billion with imports from developing countries like Kenya accounting for 302,000 tonnes worth € 1 billion.

Even though it was hardly a crop to deal in, a daring farmer, Elijah Mbugua visited Nyahururu open

market in 2014 to learn about the herb after a tip from his father.

"I curiously noticed Indians trooping to my neighbour's stall and coming out with packets of a certain plant. When I asked what that was; he told me the herb was called methi. I was not convinced, I bought a bunch and took to my father to confirm the truth," says Mbugua amid laughter.

Three months later, Mbugua bought a kilogram of the seedlings at Sh500 (USD5) from an Indian shop in Nakuru town.

"I came back with the seeds and planted in a 50m by 50m plot to propagate my own seeds. In that small plot, I harvested 5kg of the seeds. I got encouraged and planted three quarters of an acre."

Today, he has ventured into value addition to maximize returns and increase its shelf life.

"Most farmers were selling the leaves. So I decided to do something different and I have never regretted that decision," he explains.

He sells his products during agricultural shows, exhibitions and to hotels. A 100 gramme pack of powdered methi goes for Sh200 (USD2), while a kilogram of the seedlings goes for Sh1,200 (USD12).

"In a good month I make up to 50,000 (USD500) from the herb."

With these earnings, Mbugua comfortably takes care of his family's needs.

"I used to struggle to get school fees, but since I started cultivating methi my two sons attend school with ease."

To satiate his appetite for methi farming, Mbugua acquired one and a half acres nearby.

“From this plot, I expect a bumper harvest in a few weeks,” says Mbugua.

Although many families in Kenya are unaware of the numerous medicinal values of methi, Mbugua uses exhibitions and shows to educate the public.

“In a month I attend several exhibitions from all over the country, where I get new customers as well as educate the show attendees on the importance of this herb.”

“A part from being used in Indian curry dishes, methi is effective in the treatment of sore throat and Type 2 diabetes. It also helps lower blood cholesterol levels and increase circulation.”

Mbugua explains that methi plant needs moderately cool climate throughout its growth period. For increased yield of fenugreek seeds, the farmer must consider suitable soil pH and cultivate in a wide variety of soils with rich organic matter, he says.

“The seeds need a soil with pH value of 6.0 to 7.0. Seed sowing should be carried out at 30cm apart in rows with a planting space of 10cm,” explains Mbugua.

Methi plant takes (3-6 weeks) of growth and can be consumed as a leafy vegetable. At three months, the plant develops seeds and is ready for harvesting.

“Methi matures fast to about two feet (60cm), with yellow/white flowers and long yellow seed pods,” he adds.

Although cultivation trials have been conducted in several countries including Kenya, there has emerged no producer large enough to challenge the dominance of the principal exporters in the international market.



Health benefits of fenugreek

- **Diabetes** – fenugreek seed has been found to reduce blood sugar levels and improve glucose tolerance in patients with both types 1 and type 2 diabetes.
- **Healthy cholesterol** – fenugreek seed has also been shown to significantly improve blood cholesterol levels including serum total cholesterol, LDL and VLDL cholesterol and triglycerides.
- **Sexual health** – fenugreek has long been understood to increase libido as the seeds are rich in diogenin, a substance that mimics the activity of oestrogen.
- **Digestion** – When eaten, fenugreek seeds release mucilage, creating a soothing effect on the digestive organs, reducing gastric inflammation, reflux, flatulence and heartburn.
- **Skin inflammation** – fenugreek is an effective topical treatment for skin problems such as abscesses, boils, burns, eczema and gout. Make a poultice of crushed seed warmed in water and apply.
- **Childbirth and lactation** – fenugreek has long been believed to stimulate uterine contractions, speeding up and easing childbirth while also boosting milk production in nursing mothers.
- **Coughs, fever and flu symptoms** – fenugreek has traditionally been used to ease coughing, reduce fever and relieve the accompanying flu symptoms. The seeds are combined with honey and lemon to make a soothing tea.
- **Menopause symptoms** – fenugreek has natural *estrogens* making it effective in treating the symptoms of menopause such as hot flashes, anxiety and insomnia.
- **Cancer** – some studies have suggested that diogenin, found in fenugreek, may have anti-carcinogenic properties.
- **Fibre** – With its rich fiber content, fenugreek is very useful in treating constipation (helping to avoid anal fissures and *hemorrhoids*) while acting as a preventive against cardiovascular disease.
- **Chapped lips** – powdered seeds when mixed with petroleum jelly will soothe chapped .

Camel milk value added products launched in Garissa



women have been empowered and trained on various aspects around camel milk production.

Hussein Hassan, Chair, Tawfiq camel self Help Group says they have seen progress since the group was formed in 2015. "Our main vision as a group is to see the livelihoods of livestock keepers in Garissa County improved. We get milk from Saka, Jarerot, Dujis, Shille, Dertu, Malmin and Bura locations.

"When we started we could only handle ten litres of camel milk, now we get up to 300 litres and our target is to have up to 2000 litres in a day. We have four permanent employees who work in the shop where milk is processed and sold here in Garissa town, Hussein says.

"Our producers are trained on hygiene and processing by our partner, Adeso. We have a Kenya Bureau of Standards quality assurance which we received this year in January. We can now sell our milk to other consumers anywhere in Kenya without fears of compromised quality standards," he notes.

Tawfiq Camel milk products branded as NAHY range from fresh camel milk, yoghurt and fermented milk. One litre of camel fresh or fermented milk goes for USD 1.50 and yorghurt for USD 2.50. Hussein says they have received potential orders from local shops around Garissa, Nakumatt and Tusksys chain stores.

However, milk producers are not without challenges. Climate change is one of them. Hussein points out that drought affects milk production because herders move very far when there is drought, they don't have a cooler vehicle to transport milk and they need market linkages too.

Nadhif Jama, Governor, Garissa County while gracing the launch noted that his government is keen on supporting the expansion of the project.

Garissa County has approximately 300,000 camels and at least two million livestock keepers who are expected to benefit from this camel milk value addition.

By Mary Mwendwa, Senior Reporter I ambasa_77@yahoo.com



A self help group in a county known for its livestock economy and history of drought is now seeking to transform its fortunes by adding value to camel milk. The results have been quick with camel rearing shooting up within a short time.

Speaking during a recent official launch of the camel milk products in Garissa County, Fariah Bare, a middle aged woman could not hide her joy about the camel milk processing project. A vice chair of Tawfiq Camel milk self Help Group, she says, "Camel milk production in this region is our source of pride and livelihood. For a long time we have locked ourselves out of the external markets which could fetch more money. Now we are happy we get value for what we produce,



Beans that cook in 15 minutes: saving time and money in Kenya and Uganda

As opposed to 2 hours with traditional unprocessed dry beans,
the new precooked products will take 10 -15 minutes to cook

Beans are an important staple food in sub-Saharan Africa, particularly in rural areas of Eastern Africa. One of the biggest limiting factors to bean consumption is the time required to cook them and, consequently, the amount of fuel or firewood required for cooking. However, an innovative project, with researchers working in collaboration with farmers and the private sector, is developing bean products that cook in 15 minutes or that are ready to eat for Kenya and Uganda.

High in fibre, protein, complex carbohydrates, folic acid, iron and zinc – beans are great for enriching our diets, especially for pregnant women and growing children. But in rural areas, firewood for cooking is time-consuming to collect and, in urban areas, charcoal is expensive. By engaging farmers and the private sector to introduce a range of quick-cooking and ready to eat bean products to suit different consumers

(rural, urban and peri-urban), this East African beans project is set to impact in a number of ways on farmers and consumers across Kenya and Uganda. The project is being supported by the Cultivate Africa's Future (CultiAF) Fund, a \$15 million initiative jointly funded by Canada's International Development Research Centre and the Australian Centre for International Agriculture Research.

'As opposed to 2 hours with traditional unprocessed dry beans, the new precooked products will take 10 -15 minutes to cook,' explains Dr Michael Ugen, from the Kenyan National Agricultural Research Organisation and principal investigator for the bean project. This significant reduction in time will not only have beneficial impacts on the environment and urban and rural household finances with less fuel being used, but also on men and women's decision-making and time allocation within households. 'Generally, the responsibility of

collecting firewood and cooking falls to women and children. By reducing the time needed to prepare beans and collect the fuel to do so, valuable time becomes available for women, and as a result the possibilities of using their time for other important activities,' emphasises Dr Ugen.

From seed to shelf

So how does the project intend to develop the market for these quick-cooking and ready to eat bean products? 'To create a successful value chain from seed to supermarket shelf, we are engaging farmers to produce the beans, private sector processors for product development, as well as working with local supermarkets, agricultural extension workers and local government,' explains Dr Ugen.

To date, 47 bean varieties (15 from Kenya and 32 from Uganda) have been screened and 17 selected for further evaluation and product prototype development.

In Uganda, 10 of the 17 initial varieties have been selected for seed production so that farmers can grow these suitable beans on a commercial scale for processing.

"Firstly, it is important to work closely with the farmers," acknowledges Dr Ugen. In East Africa, bean production is mostly carried out by small-scale farmers with only 0.4 to 0.8 hectares of land per family. 7,000 farming families have already been selected to participate in the project (3,000 from Kenya and 4,000 from Uganda) that will provide training in better agronomic practices to produce bean varieties for processing into quick-cooking and ready to eat bean products; and in how to organise better in formal groups. This means that groups are registered with local government authorities and are able to develop stronger business relationships with the private sector than as individuals.

"We are also introducing farmer groups to local government, extension workers and microfinance institutions – those who, in the long-run, can help support a sustainable quick-cooking and ready to eat bean market," acknowledges Dr Ugen. "However, the challenge at this stage is making sure farmers have the seeds to cultivate in order to produce enough precooked beans to meet processing demand from our private sector partners including Lasting Solutions. A good position to be in but a challenge none-the-less," he concedes. "We're looking forward to seeing how farmers groups progress and take advantage of the commercial opportunity presented with bean processing from grains into these quick-cooking and ready to eat products."

Appealing to diverse consumers

Joab Ouma, business development director of Lasting Solutions – a Ugandan commercial agro-processing company - explains



the private sector's role in the new bean value chain: "It is to develop prototype products and packaging for market testing. Catering to diverse consumers is a new world that marketers are up against, but it a challenge we are embracing. The beauty of the challenge is that as much as consumers are diverse, they also have a lot in common. For instance, we all eat beans but we often eat beans very differently. Our job is to offer a range of products with a single core ingredient that is available in different pack sizes and sometimes even modify the branding to appeal to our different consumer groups," concludes Joab.

Looking forward, "We are very excited about 2016," Dr Ugen says. A consumer analysis has been completed and four consumer groups and target markets of focus have so far been identified, which are: top-end consumers,

sustainable middle consumers, vulnerable middle consumers and bottom-end consumers. "For instance, 'sustainable middle' urban consumers are preferring quick-cooking and ready to eat beans mixed with sauces, such as tomato, which are easily cooked and ready-to-eat within minutes. Vulnerable middle and bottom-end consumer groups, which tend to be more rural households, prefer plain, 'wet' quick-cooking beans to decide how best to prepare them. Whereas top-end and travelling consumers prefer ready-to-go nutritious snack products," explains Dr Ugen. "Following on from successful bean snack tasting trials in supermarkets, we will be asking shoppers for their feedback on the other products we have developed, which include plain 'precooked' beans ('wet' or 'dry') and beans with tomato sauce and other ingredients which are ready

Wool crafting saving last crop of bird species only found in Kenya



A woman spinning wool at Njabini Wool Crafters Workshop - Kinangop, Nyandarua County, Kenya

PHOTO CREDIT MARY MWENDWA



outlets paid peanuts, about Sh10 (USD 0.1) for a kilo of wool. They would therefore rake more money growing crops.

With most grasslands converted into maize and vegetable farms, it was apparent the long claws were losing breeding grounds to human activity and were on a wide path to extinction. So endangered were the long claws birds that they were in the IUCN's red list of very endangered species.

However just before the last crop of long claw birds were wiped away from the earth, a group of conservationists stepped in at the nick of time with win-win strategies for both the birds and the farmers.

Dr Kariuki Ndong'ang'a, a bird researcher at Birdlife International, said they initiated conservation efforts in early 2000 by forming a conservation group called the Friends of Kinangop Plateau to raise awareness among local communities on the benefits of the conserving the birds.

"It also included encouraging of farmers to undertake economic activities that are friendly to retention of grassland in their farms for instance sheep rearing and bee-keeping," Dr Ndong'ang'a

By Leopold Obi, Special Correspondent | leopoldk40@yahoo.com

The last rays are fading over Njambini, a small town in Kinangop, Nyandarua County about two hours' drive south-west of Nairobi.

However, for Emily Ndirangu the day is far from over. The 24 year-old will work late into the evening to spin loads of thread needed to weave mats and carpet whose delivery time is almost due.

Seated on a wooden stool, Emily picks a ball of cuddled wool from a 90kg sack before feeding it into a wooden spinning wheel which she manually operates.

"We buy the wool locally from sheep farmers in Kinangop sub-county. Then we spin and weave them into different fabrics such as mats, scarfs, jackets and carpets which we export to the United Kingdom," she explains.

Emily and her fellow spinners might pass for some ordinary wool crafters, but their role in the wool value chain is directly helping in conservation of a species of birds that would otherwise have been wiped out of the planet by human's glut.

The birds known as sharpe's long claw, resemble the weaver birds- their cousins -but unlike the weavers, long claws prefer highland grassland areas with tussock grass for shelter and breeding.

A decade ago, many farmers in Kinangop, a region known for sheep rearing, cleared acres of grassland as they embarked on crop cultivation, in the process interfering with the birds' natural habitat.

The farmers say they burnt their fingers in rearing sheep for wool as there was no ready market for the commodity, and the few available



Wool products - Mats, at Njambini Wool Crafters Workshop

PHOTO CREDIT MARY MWENDWA



Sharpe's long claw

explains, pointing out that through the awareness group, Njambini wool crafting venture was born.

According to the expert Sharpe's long claw is only found in Kenya, but in various locations where highland grasslands exists.

Dr Ndaganga explains; "these include areas around Aberdare ranges, Mt Kenya, Molo, Mau Narok and Mt Elgon. However, Kinangop has for long been considered the stronghold of this species."

The conservationists also purchased 100 acres of grassland in Kinangop as part of their conservation efforts.

Njambini wool crafters is now a ready market for wool and the conservationists also introduced pedigree rams to sheep farmers to improve the quality of their flock.

James Maina, a sheep farmer, recounts; "My father had about 200 sheep but used to give away or sometimes burn the wool due to lack of market. A kilo of wool retailed at Sh10 (USD 0.1) by then."

The farmer, an owner of over 20 pedigree corriedale sheep, now sells his wool to Njambini Wool Crafters at Sh150 (USD 1.5) a kilo and recounts that a pedigree ram which was shared among ten farmers has made his commercial sheep rearing venture viable.

Apart from the rams Maina explains, several youth in the area became tour guides, taking tourists around to bird sanctuaries and earning income, others later pursued careers as bird researchers.

He now has his own rams and other farmers pay when they need the services of his ram.

"A sheep can be sheared once or twice in a year," he notes adding that commercial sheep rearing is rewarding not only because of the wool.

Birds provide insects, rodent and parasite control, plant pollination, seed dispersal which result in tangible benefits to the people. Similarly vultures help in cleaning the environment.

Maina says rearing sheep for wool and meat calls for proper management practices that include deworming at least after every two months. "This will give them appetite which helps them grow faster."

The farmer also sells sheep to budding farmers and to local butcheries. A six-month old sheep costs Sh10,000 (USD 100) while an adult is sold at Sh15,000 (USD 150).

To get quality wool from your flock, according to Maina "a sheep's pen should be raised some feet above the ground and there should be small spaces between the wooden bars used for floor construction. The spaces enable sheep's dropping to fall on the ground so they do not dirty the sheep's wool."

The flock are also sprayed fortnightly against ticks. When infested with ticks, sheep scratches itself thus damaging its hide and wool. He has paddocked his one-acre piece of land for grazing his flock where he rotationally grazes the sheep after every two weeks.

The farmer says they prefer rearing corriedale sheep breeds over merino because the former is a dual purpose sheep-producing both mutton and wool.

Joseph Okwaro, Kinangop sub county livestock production director, cautions sheep farmers against inbreeding saying it leads to poor quality wool.

"Lambs from inbred flock are often smaller in size and less productive," the livestock expert notes and advises farmers to serve their ewes with pedigree ram to improve the productivity of their flock.

Accessing Climate Finance in Kenya

Devolved powers are allowing communities greater access to climate finance in four counties in Kenya



among the Borana community- to manage the variable resources.

Funds have also been used to renovate a veterinary laboratory to help in faster diagnosing and treatment of livestock diseases, rehabilitate and fence water pans— wet season water sources.

Local climate information is used to inform the nature of investments to ensure they build resilience not only for today's climate variability and shocks, but also for future climate change.

Community representation

The WAPCs consult the community on what will build their resilience to climate change, prepare proposals with the communities, procure goods and services for the proposed investment, and monitor the implementation of investments at the ward level.

The model offers a cost effective and efficient way of channeling climate finance to the most vulnerable communities.

Accessing future finance

The passing and operationalisation of the CCCF legislation is significant as it offers the five counties an opportunity to become "executing entities" under the Green Climate Fund. This is set to rise to US \$100B per year in 2020.

The success of the CCCF model has been replicated in Mali, Senegal and Tanzania.

Ms. Jane Kiiru is a communication officer with the Adaptation Consortium

By Jane Kiiru, Special Correspondent | jkiiru@adaconsortium.org

In Kenya, four arid and semi-arid counties - Isiolo, Garissa, Kitui, and Wajir - are at an advanced stage of approving their County Climate Change Fund (CCCF) legislations. These new measures are providing local communities with access to climate finance and greater say in how it is spent.

Makueni County was the first county in Kenya to enact CCCF regulations which will allow them to access climate finance from their own budget, as well as from national and international sources.

CCCF legislation commits counties to contribute a minimum percentage of their development budget to local adaptation finance, empowering residents through their elected Ward Adaptation Planning Committees (WAPCs) to set priorities on how the 70% of the funds set aside for adaptation will be used.

The CCCF approach, initially

piloted in Isiolo and now being replicated in Makueni, Garissa, Kitui and Wajir, makes use of funding from the UK government's Department for International Development (DFID). Communities through the elected Ward Adaptation Planning Committees (WAPCs) draw down from the constituted pot to finance investments that builds their resilience to climate change.

Following Isiolo's example on resilience building

In Isiolo, where the project was first piloted, the fund has helped community members build their resilience to climate change through investing in infrastructure, such as sand dams to trap rainwater, providing a clean and reliable source of water during droughts. The fund has also helped strengthen customary resource management institutions - for example dedhas"



Open Defecation Costs Billions Annually in Kenya

By Kiprotich Koros, Staff Writer | korospro@gmail.com

Open defecation costs Kenya US\$88 million per year – yet eliminating the practice would require less than 1.2 million latrines to be built and used. About US \$26 million is estimated to be lost in access time with each person practicing open defecation spending almost 2.5 days a year finding a private location to defecate according to Tobias Omofwoko of WASH Alliance Kenya.

Approximately 19,500 Kenyans, including 17,100 children under 5, die each year from diarrhea – nearly 90% of which is directly attributed to

poor water, sanitation and hygiene (WASH) says Mr. Omofwoko who added that US\$244 million lost each year due to premature death.

21 million Kenyans use unsanitary or shared latrines while an estimated 5.6 million have no latrine at all and defecate in the open.

The poorest quintile is 270 times more likely to practice open defecation than the richest.

Water, sanitation and hygiene is fundamental for life, health, dignity and empowerment and are considered basic requirements for the fulfilment of the right to health, adequate standard of living, housing and education among other rights.

“Without a toilet, people often lack privacy while defecating in the open, or in plastic bags; and in extreme cases, they often have to wait till dusk to find a place in privacy,” Mr Omofwoko says.

Poor sanitation limits the impact of efforts to improve drinking-water quality. “The risks of water contamination during household storage and handling sharply increase in environments that lack toilets,” Mr. Omofwoko says.

Women and girls in many societies are often charged with the responsibility of fetching water exposing themselves to physical and sexual violence.

US\$2.7 million lost each year due to productivity losses whilst sick or accessing healthcare.

It is estimated that US\$51 million is spent each year on health care: costs include consultation, medication, transport and hospitalization which place a heavy burden on households and government spending.

The cost of a necessary cholera outbreak WASH response is estimated to be US\$2.2 million each year.

Economic losses due to poor sanitation, on the other hand is estimated at between 0.5 and 7.2 per cent of their GDP.

The WEF Travel and Tourism Competitiveness Report ranks countries according to 75 indicators, one of which is sanitation status. Addressing sanitation in Kenya could lead to an increase in travel and tourism of an estimated US\$11.4 million annually.

According to Mr. Omofwoko, the government should allocate higher investments to sanitation. “Current sanitation investment in Kenya is between 0.1%-0.5 GDP which is lower than several estimates for what is required,” he says.

Rethinking Waste Water Management in Africa

By **Aghan Daniel**, Secretary MESHAKENYA | aghan@meshakenya.org

Africa needs to abolish faecal waste management in its quest to curb wastage of water. According to a study on waste water management carried out by CSE in 2015, the high cost of disposing faecal waste should be blamed on colonisation, which constructed modern sewage systems. "The colonial administration created systems and structures where the participation of local people in making decisions was completely eliminated while the systems also became more and more centralised," the study read in parts.

The report furthers that while water supply systems were centrally controlled and relied on long transmission lines as well as transportation of water from distant locations, sewage disposal too, was done in a centralised manner in most towns and cities. "As much as 20 to 50 per cent of water was wasted during the supply process."

Going by the analysis, the per capita (per person) consumption of water increased when the sewage systems became more 'modern'. For example, data from India shows that in towns, the per capita consumption of water was 70 litres per person per day. This, according to the study, increased to 135 for cities. For the metros, it was as much as 150 litres per person per day.

"Only 20 per cent of this water is consumed. The rest is waste water – indicating an urgent need to curb wastage of water through wasteful sanitation and other practices," said Suresh Kumar



Rohilla, Programme Director (Water Management) of CSE.

According to WASH Alliance in Kenya, it is estimated that only one-third of the residents have access to sufficient, affordable and potable water close to their homes.

More so, only another third of Kenyans have access to improved sanitation. This basically calls for integration. As we think of the improved sanitation, costs also need to be discussed. In the rural areas, according to WASH Alliance Kenya, open defecation is still practiced by 18% of the population.

This suggests that contaminated drinking water, poor sanitation and hygiene are urgent and growing health concerns. It is the leading cause of diarrhea, which is one of

the main causes of death in Kenya.

In an effort to bridge the gap, WASH Alliance Kenya is currently raising awareness on low cost management technologies and faecal sludge management. They have launched a Sanitation and Solid Waste Fund for Small and Medium Enterprises (SMEs) and local banks. This is aimed at influencing governments to adopt pro-poor and innovative waste management approaches that would target 175,000.

While WASH Alliance commits itself to this intervention, Ms Henrietta Ose -Tutu of the Department of Environmental Sanitation, Ghana observed that the current discussion and effort around waste management was more focused on solid waste.



Cholera Outbreaks Point to Lack of Clean Water

By **Lucy Ochola**, Siaya County, Special Correspondent | beatadesh@yahoo.com

Siaya County is one of the counties in Kenya that have been repeatedly affected with episodes of cholera outbreaks in the last two years.

Between the month of February and mid March this year the county recorded more than 309 cholera cases and ten deaths, the highest in recent years.

Statistics from the Ministry of Health indicates that in 2015, the county recorded four cholera outbreaks with 146 reported cases and 7 deaths with the index case reported in May.

Marbel Chanzu, the Siaya County Public Health Officer points out that despite the four cholera episodes

in 2015, few people were affected by the water borne disease since the two water bodies which were the major sources of cholera were serving a small area - Gem, Alego and Bondo sub counties.

However, she says that this year the number of victims went high since Rivers Nzoia, Wuoroya and Uludhi which were the major sources of cholera cut through Gem, Alego, Ugunja and Ugenya sub counties.

Ugunja Sub County, was however one of the worst hit during this year's outbreak that lead to the closure of its major markets and various food outlets.

Dr. Benard Ongunje the medical superintendent at Ambira sub County hospital says that

they came to the decision of closing down the market during a health stakeholder's forum after realizing the market which serves a huge population had poor sanitation as it lacked clean water, public latrine and proper dumping sites.

The Public Health Department also attributes eating in public places especially in funerals as one of the major causes of the spread of the water borne disease.

Ms. Chanzu points out that convincing bereaved families against eating in funerals and closing business premises early enough to do cleaning are the major challenges they face in the fight against cholera.

“If our people can change their attitude and avoid eating in funerals, then it would be easy to eradicate cholera and Siaya County would soon be declared a cholera free zone,” said Ms. Chanzu.

Chief Thomas Ojero of North Alego Sub location within Alego Usonga Sub County, one of the areas affected by the cholera outbreak, has even urged the residents to conduct burials and allow the in-laws to return later to feast after eradication of the water borne disease.

Clean Water Still Elusive for Many

Cholera outbreaks often occur during rainy seasons due to poor sewage systems in other urban areas like Nairobi. The 2015 MDG is to halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation”, corresponding to 88% of world population for water, and 75% for sanitation.

Access to safe water and sanitation services are fundamental for life, health, dignity and empowerment.

“Clean drinking water, and safe sanitation are basic to the fulfilment of the right to health, to an adequate standard of living, the right to adequate housing, the right to education, and to the fulfilment of many other rights,” according to Denis Munai of WASH Alliance Kenya.

Life without these services is a life of poor health, nutrition, education and employment.

Cholera is a disease caused by direct or indirect consumption of human faeces and is associated with poor hygiene hence stigma to the affected individual, an issue that the Public Health Department observes has caused the delay in rushing suspected cholera patients to hospital in good time.

Ms. Chanzu says that some of those who lost lives were taken to the health facilities after losing a



lot of body fluids due to persistent diarrhoea and could not respond to treatment since their bodies were already highly dehydrated.

Open Defecation is one way in which human faeces get to flow in rivers which are the major sources of water for domestic use. It may lead to diarrheal diseases if consumed untreated.

Even though the county has 82% latrine coverage with 45% of villages being open defecation free, some of the human waste still get their way into the streams and in exposed food.

Ms. Chanzu explains that despite the figure it is hard to base the possibility of cholera outbreaks on the availability of latrines.

“It is one thing to have a latrine in a home, but totally a different thing to properly use the latrine in a

manner that can prevent diarrheal diseases,” said Ms Chanzu.

To avoid further spread of the deadly disease, the Public Health Department has embarked on a massive campaign across the county giving health promotion messages as well as supervising burials of cholera victims.

The Health Department has also partnered with other organizations to supply residents with water treatment kits like chlorine.

Proper hand washing, treating water for domestic use, proper use of latrines, reporting cases of suspected diarrheal diseases are some of the measures the Public Health Department says if observed can put an end to further cholera outbreak in the county.

Cholera outbreaks occur both in dry and rainy seasons.

Committing to save lives of newborns through medical oxygen



Dr Steven Adudans, the Centre for Public Health and Development executive director

for all facility levels providing critical training, maintenance, and accessories necessary for health facilities to truly benefit from the oxygen," Dr Adudans said in an interview with SAYANSI.

So, why is medical oxygen critical?

"Medical oxygen is an essential drug that saves thousands of lives daily, but it doesn't exist in many health facilities in developing countries," Dr Adudans observed adding that this is saving the lives of thousands of newborns and children.

Oxygen is a matter of life or death; the only way to keep them alive until other medications take effect, he said noting that pneumonia, premature birth, and sepsis are leading causes of death among children under five claiming the lives of nearly three million children annually.

Dr Adudans is optimistic that providing these critical medical oxygen will greatly contribute to the World Health Organisation target to reduce deaths in children below five years, by 35 per cent.

Listed as an essential component in healthcare by the WHO, medical oxygen saves lives yet in some countries it lacks in health facilities denying thousands of individuals the chance to live.

"While it is an ever-available drug in developed countries, one out of every four health facilities in sub-Saharan Africa never have oxygen available, and 32 per cent have an irregular supply," Dr Adudans said adding that neighbouring Tanzania also faces similar challenges where 75 per cent of hospitals had oxygen supply for less than a quarter of the year.

By Joy Wanja Muraya, Senior Health Reporter | wanjajoyce@gmail.com

He is part of a dedicated team breathing fresh air into the lives of little ones below five years, promising them longer and healthier playful days ahead.

Meet Dr Steven Adudans, the Centre for Public Health and Development executive director, home to the 'Hewa Tele' project whose service is aimed at ensuring a steady supply of medical oxygen to public health facilities, a critical aspect of pneumonia treatment.

According to Dr Adudans, the Centre for Public Health and Development strives to be the home of innovative health solutions to avert preventable

maternal and child deaths through innovative health solutions like the Hewa Tele Project.

Dr Adudans noted that clinical training is also part of the implementation package where their projects supported by General Electric Foundation, are hosted to enhance sustainability.

And what a better way than to provide oxygen to health facilities through a partnership programme known as "Hewa Tele," that translates to 'abundant air' where medical oxygen is provided in an analogy he refers to as the 'milkman's analogy.'

"The distribution model ensures both efficiency and maximum accessibility

And whereas in Kenya, about one out of every two children prescribed oxygen were unable to get it, this is a trend historically where oxygen concentrators in health facilities have not worked well due to lack of constant supply of clean power to function.

Regular preventive maintenance is another gap that CPHD is optimistic will not only see many more children live to see their fifth birthdays and grow into healthy adults.

However given that the project is a novel public-private partnership, some of the challenges faced includes poor and limited oxygen network in the health facilities.

"Existing providers do not venture beyond main towns, and the depots often run out of stock leaving those in rural facilities with oxygen stock-outs forcing them to travel to distant depots to resupply," said Dr Adudans.

The cost of oxygen is also prohibitive, almost ten times more expensive than in the United States of America and coupled with lack of local technical capacity to repair and maintain these oxygen plants, it makes it a pipe dream.

Dr Adudans opined that there is need to attract political goodwill from the leaders thus this will also encourage buy-in from the residents where the oxygen plant is hosted thus they know there is a health facility to attend to their health needs, even at the most critical times.

What is the advantage of this form of oxygen supply?

"Cylinders do not require power, are easy to set up thus decreasing handling risks," said Dr Adudans.

However for health facilities that do not have existing oxygen plants, Dr Adudans advises that they start from the basic units of oxygen supply and later graduate to the cylinders.

"However, lower level facilities require additional support. More specifically, they need to invest in the



basic infrastructure required to make the most out of oxygen cylinders," he said.

Existing providers do not venture beyond main towns, and the depots often run out of stock leaving those in rural facilities with oxygen stock-outs forcing them to travel to distant depots to resupply

Dr Adudans.

Any expansion plans?

Because charity begins at home, CPHD aspires to spread the Hewa Tele project to other health facilities in Kenya and later venture beyond the borders into Malawi, Tanzania, Uganda, and Rwanda.

"We anticipate to deploy this package to 20 low level facilities covering about 20,000 children under five years and from one day to the next these children will have access to a facility where basic treatments against pneumonia, malaria and other oxygen-related conditions are available," Dr Adudans reiterated the CPHD to the Kenyan child today.

And the opportunity for governments to take on the Hewa Tele model and deploy oxygen plants in strategic locations in a way that would cover the entire population looks promising, Dr Adudans concluded.



African countries urged to be vigilant amid spread of Zika virus

By **Tikondane Vega**, International Correspondent, Malawi | tikondanevega@gmail.com

African countries have been urged to be watchful and prepare to tackle the Zika virus disease.

“The most effective forms of prevention are reducing mosquito populations by eliminating their potential breeding sites and using personal protection measures to prevent mosquito bites. I call upon countries in the region to strengthen vector control, surveillance and laboratory detection of Zika virus disease and neurological complications, as well as public awareness”, said Dr Moeti, World Health Organisation Regional Director for Africa in a statement.

Zika virus occurs in tropical areas with large mosquito populations and the disease is likely to spread in Africa, the Americas, Southern Asia and Western Pacific.

People are infected with the Zika virus when bitten by an infected *Aedes* mosquito – the same type of mosquito that spreads dengue, chikungunya and yellow fever.

Following the recommendations of the panel of experts convened under the International Health Regulations in February, 2016 the Director-General of the World Health Organization, Dr Margaret Chan declared the outbreak a public health emergency of international concern (PHEIC).

This means that the disease constitutes a public health risk to other countries through the international spread of disease and requires a coordinated international response to address it.

Considering the wide distribution of this type of mosquito, all the countries in the African Region are at risk of Zika virus transmission.

In the African region, Cape Verde has reported an outbreak with over 7,000 cases since October 2015. However, the number of cases has been on the decline since December 2015.

Experts says there is no specific treatment for the Zika virus disease but it is important to be aware of its symptoms - fever, skin rash,



muscle and joint pain, conjunctivitis or red-eye, tiredness and headache. These are normally mild and can be treated with common pain and fever medicines, rest and drinking plenty of clean water. Symptoms normally last for two to seven days.

The Zika virus outbreak in the Americas has been associated with an increase in babies born with microcephaly (small heads) at the same time of the of Zika virus outbreak. Health authorities and agencies are now investigating the link between microcephaly and Zika virus in addition to other possible causes.

To protect people from the disease, the Regional Director urges all countries to intensify surveillance activities, implement vector control measures, enhance laboratory confirmation procedures, ensure adequate case management, public education about the risks associated with Zika virus and encourage them to take every precaution against mosquito bites and monitor pregnant women for detection of

microcephaly and neurological complications.

The WHO Country offices across the region are providing the necessary support to the national authorities to effectively prepare and respond to Zika virus disease.

Meanwhile the Malawi government says it is geared up to fight the Zika outbreak in case it reaches Malawi.

The spokesperson in the Ministry of Health Adrian Chikumbe said they are making sure that preventive measures are taken in order to control the outbreak in case it reaches the country.

"We are aware of the Zika virus and we know that its preventive measures are like that of malaria and government will intensify interventions to prevent the outbreak," said Chikumbe.

He further said that government is working with World Health Organisation (WHO) to make sure that the outbreak is prevented.

In May 2015, the Pan American Health Organization (PAHO) issued an alert regarding the first confirmed

Zika virus infection in Brazil.

The outbreak in Brazil led to reports of Guillain-Barré syndrome and pregnant women giving birth to babies with birth defects and poor pregnancy outcomes.

Due to Zika disease, Centre for Disease Control (CDC) has issued a travel notices designed to inform travellers and clinicians about current health issues related to specific destinations.

United Nations Development Programme (UNDP) says it stands ready to join an international response, led by the World Health Organization, to an outbreak of microcephaly and other severe neurological abnormalities, which may have been associated with the mosquito-borne Zika virus.

"The ongoing spread of the Zika virus is a cause for great concern, particularly in relation to the impact the virus is having on individuals, families and communities and the potential impact on development," said Helen Clark, Administrator of UNDP.



More research and public awareness needed on Zika virus - Kemri expert

By Clifford Akumu, Staff Writer | akumu.clifford@gmail.com

A vector biologist has downplayed fears of Zika virus spreading to parts of Kenya, but stressed on the need for researchers to 'evaluate the risk the virus might portend for the country.'

Dr. Joseph Mwangangi, Kenya Medical Research Institute (KEMRI), said that there is little research to shape any conclusion on the magnitude of the virus in the county, noting that major concentration has always been on malaria.

"Mosquito bites have pushed researchers to concentrate on malaria. There is need to shift our gears and cover other areas of research in order to win this war on Zika," said Mwangangi, who also breeds mosquitoes at Kemri's vector biology unit in Malindi-Kenya.

The first Zika virus case was reported about 70 years ago, when scientists were studying mosquitoes in Uganda.

"The first scientific paper that studied the Zika virus was published around 1970s by the World Health Organization (WHO). After that, no comprehensive work has been done

on the virus especially in Kenya" recalls Mwangangi."

Mwangangi called on the government to scale up surveillance and embark on 'a series of public health awareness' to contain any outbreak of the virus that is associated with the undeveloped heads and brain of newborns, a condition called microcephaly.

The virus, he says, belongs to a family called 'arbovirus'-meaning they are transmitted by mosquitoes and results into fever, hemorrhagic fever and muscle and joint pain.

Aedes aegypti, the mosquito species that carry the Zika virus that is now global public health emergency is widely found in Kenya and other African countries along the Indian Ocean coast but there have not been major outbreaks of the disease in the country.

"The species is a 'container mosquito' meaning it breeds in black containers. Over 90% of mosquito habitats are as a result of human activities.

With proper awareness, we are able to reverse that breeding trend"

noted Mwangangi on the sidelines of the sixth Kemri Annual Scientific and Health Conference in Nairobi.

The mosquito species which transmits Zika virus is also linked to other diseases such as dengue fever, yellow fever, and Chikungunya.

Mosquito-borne diseases account for approximately 98% of the estimated burden attributed to vector-borne infectious diseases.

The greatest burden of these diseases occurs in the tropics especially sub-Saharan Africa, but developed countries are also experiencing a fair share of this burden largely due to globalization and human-mediated environmental change.

Just like *Anopheles gambiae*, the species carrying the Zika virus is prone to behavioural changes on biting time hence the need to invest on research and innovation.

According to him, larval source management of mosquito breeding sites is a key vector control tool in containing any mosquito-borne disease.

"Research is a twin sister to innovation-what is working today might be obsolete tomorrow; we have to be at par with the sophisticated mosquitoes in order to tackle these viruses," he said.

KEMRI's acting director of the Centre for Virus Research, Dr Rosemary Sang said the viral infection can be misdiagnosed.

"There are specialised lab tests to confirm whether it is the Zika virus but they are only available at KEMRI and other research labs." said Dr. Sang.

"At KEMRI we have tackled other arbovirus. The capacity to test Zika virus is available. We have also been able to test lethal viruses such as Ebola," added Dr. Mwangangi.

There are two strains of the virus; African and the Asian scientists say the Asian strain which is causing severe birth effects in South America is more troublesome.

At least 20 countries in Latin America and Cape Verde in West Africa are affected by the virus sparking fears in many parts of the world.

Mosquito behaviour change complicates malaria control in Africa



By **Naftali Mungai**, Senior Correspondent | naftalik@yahoo.co.uk

When the insecticidal properties of Dichlorodiphenyltrichloroethane (DDT) were discovered in 1939, man was upbeat that he was finally going to conquer malaria, the biggest cause of death in the world, especially in tropical Africa. However, this enthusiasm was short-lived because after only a few years of use in killing the mosquito vector, it was found that mosquitoes were developing resistance to the chemical. With time it was also discovered that DDT was killing a lot of non-target organisms.

In addition to this, it had devastating impacts on the environment. It was an unprecedented indictment of DDT and led to its ban in the US, which was later followed by similar action in many other countries. DDT has since become a pariah chemical and has been banned in almost the entire world.

Exit DDT and enter Insecticide-Treated Nets (ITNs) in the late 90s and early 2000's and man was once again

beaming with confidence, thinking that a strategy to replace DDT for controlling the indefatigable malaria vector was now in his hands.

But how mistaken he was! After several years of use, the wily creature is now demonstrating to all and sundry that it had yet another ace up its sleeve. The effectiveness of ITNs, which were later developed into the Long Lasting Nets (LLNs), was predicated on the fact that mosquitoes bite at night when humans are asleep. But in what may morph into a major headache for malaria experts, *Anopheles* mosquitoes, the major malaria vector in Africa, have recently started to change their blood-feeding behavior. Instead of biting indoors, they are slowly moving outside the house and biting man from there, a phenomenon referred to as exophagy, as opposed to the earlier endophagy.

To compound matters even further, they have started biting in the early morning and dusk, a biting behavior referred to as crepuscular. These two

changes in behavior have a direct implication for malaria control as they have the potential of altering malaria epidemiology in places where they occur. Parallel to these, it has also been observed in some places that the resting behavior of mosquitoes has changed. While in the past mosquitoes chose to rest indoors (endophily), they are becoming more exophilic (outdoors).

This has a direct consequence for vector control because in many countries, Indoor Residual Spraying (IRS) has for long been used as a complementary control measure to LLNs. IRS is predicated on the endophilic resting behavior of mosquitoes and exophily renders this control method ineffective or at least less effective. In addition to all these, there has been a gradual change in the breeding behavior of *Anopheles* mosquitoes. While they have characteristically bred in clean unpolluted waters that are mostly found in rural Africa, they are increasingly turning to dirty or polluted waters, mostly found in towns and cities. This has led to the advent of urban malaria, now a reality in Sub-Saharan Africa.

These changes in behavior, collectively referred to as 'behavioral resistance', are changing the entire epidemiology of malaria, especially in sub-Saharan Africa. Add to this the occurrence of resistance to pyrethroids, the insecticides used to impregnate LLNs, and you have a really potent mix. This behavioral resistance has dire implications for malaria control in Africa, the continent that bears the heaviest malaria burden in the world. Scientists are now afraid that they may have to go back to the drawing board and begin the search for a strategy to counter this otherwise the LLNs may go the same way as DDT.

Munch on 'edible stink bug' for vital nutrients, study reveals



health. The insect also contains some flavonoids, a nutrient group most famous for its antioxidant and anti-inflammatory health benefits" explains icipe scientist, Prof. Baldwyn Torto.

He adds: "The edible stink bug provides 12 amino acids, two of which are often lacking in the predominantly cereal-based diets consumed in many parts of Africa. The insect also contains high crude protein and fats, and although it is not a great source of minerals, it contains phosphorus in relatively high levels."

Professor Torto says that carbohydrate based diets such as cereal and cassava (e.g. Unga) can be fortified with powdered processed edible stink bug to increase the nutritional content and create employment.

"With scientific basis for insect use as food and ability to develop simple, affordable and environmentally-friendly methods for their mass production we will embark on ensuring food security and income generation for the rural community" says Torto.

However, the icipe study has also revealed the need for improved care in the harvesting and storage of the edible stink bugs to safeguard their nutritional value and prevent contamination by harmful compounds.

"Just like other food sources such as cereals and vegetables, harvesting and processing of the insect requires use of appropriate storage procedures to avoid the contamination with mould such as aflatoxins which are toxic."

By Clifford Akumu, Staff Writer | akumu.clifford@gmail.com

A new study now shows that edible stink bug widely found and eaten in parts of southern Africa has a high nutritional importance in diets of most Kenyans.

The study shows that, feeding on the edible stink bug has the potential to help lessen nutrient-deficient communities in Kenya where vegetable and animal sources may be limited.

In a paper published in the current PLoS ONE journal, *icipe* researchers report that the stink bug is a rich source of nutrients and antioxidants, and has the potential to play a vital role in improving food and nutritional security, as well as the incomes of rural African communities.

"We found high protein and fatty acid contents in the edible stink bug, including seven that are considered essential for human nutrition and



The fungus producing the aflatoxins favours warm temperatures and high humidity for its growth and development.

“Indeed, we found traces of aflatoxin, one of the major groups of mycotoxins, in traditionally collected and stored samples of the edible stink bug. In contrast, we did not detect the compounds in samples of edible stink bugs stored in clean and non-contaminated bags, for instance zip-lock bags,” notes Dr Robert Musundire, a postdoctoral fellow at icipe, and lead author of the study.

The researchers therefore recommend better handling and storage of the edible stink bug to ensure its safety as food.

“To avoid aflatoxin contamination, use of plastic-lined grain baskets and gunny bags, which are easy to use and clean, is recommended for storage of traditionally processed/

cooked edible stink bugs,” adds Torto.

They conclude that when harvested and stored appropriately the edible stink bug has the potential to be an important

If stored well the edible stink bug can be an important source of nutrients and antioxidants in the diets of African rural communities in the place of the preferred cereals that may lack some essential amino acids and nutrients

source of nutrients and antioxidants in the diets of African rural communities, which are often dominated by cereals that may lack some essential amino acids and nutrients.

Currently, most insects consumed as food are harvested on seasonal basis, but there underlies the need to promote their consumption.

“Our goal is for the common man and woman in the rural community to be able to have their favourite insect diet available to them all year round as a food source or a means to generate an income.”

“Some of the traditional foods including insects consumed by the common man or woman in the rural community in Kenya and elsewhere in Africa are highly nutritious and beneficial to human health and should be promoted into the main stream diets,” Torto concludes.

Gertrude launches infants hearing screening program



Salome Kironjo of Audiology Centre and Michelle Onditi

Photos: Gertrude's Children's Hospital

By **Gordon Odundo**, Special Correspondent | godundo@gerties.org

Did you know that in 2015, there were nearly 32 million children living with hearing loss across the world? The numbers may seem unacceptably high, but these are actual estimates from the World Health Organization (WHO). Most of these cases were in low and middle-income countries, including Kenya. The good news is more than 50% of the hearing loss cases are preventable. Early screening and detection is critical.

Hearing loss is defined as the lack of the ability to hear normally. This can affect one of both ears and it can be mild, moderate, severe or profound.

A child can be born with hearing loss (termed: congenital hearing loss) or it can be acquired after birth. There are a number of causes of hearing

loss; for instance if the mother has an infection during the pregnancy, or uses inappropriate drugs, this can affect the unborn child. Other causes include severe jaundice, ear infections, collection of fluid in the ear, meningitis, measles and mumps.

Hearing loss can have adverse effects on a child. Improper hearing ability often results in delays in spoken language development. This affects a child's ability to communicate and can adversely affect the child's academic performance in school. In fact in rural settings, a child who cannot hear is often unable to attend school and attain an education – which is every child's right.

In March 2012, Oticon Foundation and DANIDA Business Partnerships, Denmark formed a collaboration with Gertrude's Children's Hospital, Kenya to launch a hearing screening

program across three health facilities in Kenya to identify, treat and rehabilitate infants and children with moderate, severe and profound hearing impairment. The two additional facilities are Machakos Level 5 and Thika Level 5 Hospitals. To-date Oticon and DANIDA have invested nearly KES 40 million (USD400,000) towards the screening program for children in Kenya.

These funds are channelled towards training of staff, purchase of equipment, setting up hearing care centres, provision of hearing aids to children with hearing impairments and marketing and awareness of the screening program.

All children attending the mother-child health clinics for routine medical checkups or immunization are eligible for screening. Hearing screenings are performed using the portable and

handheld Otoacoustic emission (OAE) screening kit OtoRead™ (Interacoustics, Denmark). This service is provided to all the children for free, and is a two-stage process. Stage one of the screening is at the first point of contact with the child; if the results are interpreted as a "PASS" this indicates the child has no problem with hearing. However if the result is "REFER" the child may have the possibility of a hearing loss. All "REFER" cases are repeated on the same day to confirm the result and then the child is booked for a re-screen 6-8 weeks later.

At this point (6-8 weeks later) the child is screened one more time, if it is a "PASS" he/she is discharged, however if it is a "REFER" the child is referred for audiological assessment at the Hearing Care Centre in Muthaiga. The parents are counselled appropriately and a formal diagnosis is done, and treatment is provided. Most of the cases are managed and the child regains normal hearing following treatment however for the children who are found to be partially deaf, hearing aids are provided. Prompt and appropriate management of hearing loss provides the child an opportunity to improve on linguistic and academic outcomes.

The program has been very successful. The total number of children screened by December 2015 was 13,223. Of these 11,657 (88.16%) were found to have a low risk of hearing loss ("PASS"), 1,566 (11.84%) had a risk of hearing loss ("REFER"). Of the 1,566, 21 (1.34%) attended the Hearing Care Centre at the Gertrude's Children's Hospital for further audiological assessments.

Gordon Otieno Odundo is CEO, Gertrude's Children's Hospital



Salome Kironjo and Paul Gitau of Audiology Centre with Michelle Onditi

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