



KEFRI *Newsletter*

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Cabinet Secretary appoints KEFRI acting Director

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Cabinet Secretary appoints KEFRI Acting Director



Dr. Jane Wangu Njuguna (pictured) has been appointed the acting KEFRI Director commencing March, 2018.

The Cabinet Secretary for Environment and Forestry Mr. Keriako Tobiko made the appointment during his maiden visit to KEFRI Headquarters on 27th February, 2018.

Dr. Njuguna takes over the mantle following the expiry of Dr. Ben Chikamai's tenure. Dr. Njuguna holds a Doctorate of Philosophy (PhD) in Forest Pathology and Mycology from Swedish University of Agricultural Sciences; a Master of Science degree in Forest Science from the University of Melbourne; and Bachelor of Science in Botany and Zoology (Honours) from the University of Nairobi.

Dr. Njuguna joined KEFRI in 1987 as an assistant research scientist specializing in forest pathology and mycology. She has over 30 years experience in research, leadership and management. She is a renowned scientist with a rich experience in forest health and productivity. She has published widely and chairs major national and international meetings. She is also a member of many professional bodies.

Prior to her appointment as the acting Chief Executive Officer, Dr. Njuguna held the position of Senior Deputy Director, Research and Development since September 2017. Previously, she served as a Deputy Director, Forest Productivity and Tree Improvement from February 2014, Deputy Regional Director for Central Highlands Eco-region Research Programme and Head of Pathology where she guided research and scientists in career advancement. She was also an assistant coordinator and database manager for the International Forestry Resources and Institutions (IFRI) Research Programme - Kenya Chapter from 1997 to 2010.

As a firm and devoted Christian, Dr. Njuguna cares about God, children and champions courses on disaster and humanitarian relief, economic empowerment for the disadvantaged, humanity, education and mentorship of the youth, environment, health, science and technology. She is passionate about tree health.

We pledge our support in ensuring that the institute delivers its mandate to the public.

COVER PHOTO:

Dr. Jane Njuguna, acting Director, KEFRI

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Acting Director visits Coast Eco-region

Dr. Jane Njuguna made her maiden field visit as the acting Director KEFRI, to the Coast Eco-region Research Programme on 15th March, 2018. The purpose was to familiarize herself with research activities, implementation of project activities and personnel issues within the Coast Regional Programme.

Dr. Njuguna held a lengthy staff meeting that deliberated on research activities, tree seed production and staff performance.

The Acting Director further informed the staff that construction of greenhouses at Gede Centre was to commence soon to fulfil her passion of improving research facility. “The green houses will enhance propagation of forest germplasm for stakeholders,” said Dr. Njuguna.

She also called upon the staff to take their work seriously and focus on deliverables.

The Regional Director, Mr. M.T.E. Mbuvi thanked the Acting Director for her visit noting it was a motivator to the staff.



The Acting KEFRI Director Dr. Jane Njuguna (seated centre) with staff at Coast Eco-Region Research Programme during her visit in Gede Centre

KEFRI holds Regional Course on Climate Change



Course participants pose for a photo with the Cabinet Secretary for Environment and Natural Resources Prof. Judi Wakhungu and PS Dr. Margaret Mwakima (centre)

KEFRI in collaboration with Japan International Cooperation Agency (JICA) conducted the 4th regional course on ‘Adaptation to Climate Change in Africa through Social Forestry’ at its Headquarters, Muguga from 15th January to 16th February 2018.

This is the 23rd series of such capacity building courses conducted since 1995 supported by JICA’s Third Country Training Programme (TCTP) and the Kenya Government through KEFRI benefiting 17 countries in Eastern, Central and Southern Africa.

The Cabinet Secretary for Environment and Natural Resources Prof. Judi Wakhungu, the Principal Secretary State Department of Natural Resource Dr. Margaret Mwakima and the Chief Representative JICA Ms. Keiko Sano graced the opening ceremony.

“The course comes at an opportune time when the World met in September 2017 for the UNCCD COP13 in China where, issues on Climate Change and Sustainable Development were discussed in great depth. One major outcome of the Conference agreed upon by participating Countries was to rehabilitate more land and reverse land degradation in order to achieve land degradation- neutrality. The World also met in November 2017 for the Climate Change COP 23 in Germany. The Conference agreed on REDD+ Principles and Green Climate Fund (GCF) financial support for REDD neutrality.” Prof. Wakhungu said.

Prof. Wakhungu called on participants to be good managers of the environment, stating that we are collectively and individually called to identify factors that are currently contributing to; land degradation, climate change and pollution, and in

turn come up with practical measures necessary to mitigate and adapt to these challenges.

She reiterated the possibility of using a wide range of technologies and changes in behavior to limit further climate change impacts through adoption of best practices to enhance mitigation and adaptation measures.

Some notable mitigation and adaptation measures that she proposed include: reduction of deforestation and forest degradation in order to improve carbon sinks; expansion of forests through reforestation; efficient use of wood, restoring and promoting sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification as well as eradicating and reversing land degradation.

“We also need to minimize biodiversity loss, promote drought-tolerant, early maturing trees and food crops to meet the needs of the increasing population, such as wood and food.”she added.

In his key address, the Director KEFRI Dr. Ben Chikamai called upon the participants to implement the action plans during the training. He stated that the skills the participants acquired during the training will be of importance to Africa which is employing all possible measures to mitigate climate change.

Nyandarua Governor visits KEFRI

The County Governor for Nyandarua H.E Francis Kimemia made a courtesy visit to KEFRI on 20th March, 2017 seeking collaboration on tree planting and nursery establishment in his county.

KEFRI Deputy Director in charge of Governance, socio-economic and policy Dr. Joshua Cheboiwo, Deputy Director Human Resource Ms. Everlyne Oroni, Central Highlands Deputy Regional Director Mr. Joram Kagombe and the MCA for Sigona ward (Kiambu County) Hon. Naftaly Ngugi received the governor and his entourage.

The two parties agreed upon signing a memorandum of understanding to work towards increasing tree

cover in Nyandarua County to 30 percent by the year 2030.

“Currently the County’s forest cover stands at 22 percent making it one of the highest in the Country,” said the Governor.



Nyandarua County Governor HE Francis Kimemia and KEFRI Deputy Director in charge of Governance, Socio-economic and Policy Dr. Joshua Cheboiwo in a discussion during the visit

The Governor was accompanied by his County Secretary and Head of Public Service Mr. Hiram M. Kahiro, the CEC for Water Environment and Natural Resources Hon. Simon Ng’ang’a, CEC for Industrialization, Trade and Cooperatives Hon. Muthoni Wa Muiya.

Narok County pursue KEFRI collaboration in forestry development

Narok County Government is seeking collaboration with KEFRI to boost its forest cover, said the County Environment Chairman Mr. Charles Nkison during a visit at KEFRI Headquarters on 22nd March 2018.

Mr. Nkison said they are seeking collaboration to establish 30 tree nurseries within the county, a move that will benefit the communities with tree seedlings.

In her remarks during the meeting with the Narok County official the acting KEFRI Director Dr. Jane Njuguna said the County will have to plant three



KEFRI acting Director Dr. Jane Njuguna presenting publications to Narok County Environment Chairman Mr. Charles Nkton at KEFRI headquarters. Looking on, from left; Godfrey Maripet and Joram Kagombe from KEFRI and members from Narok County Environment and Natural Resources committee

million seedlings a year to replenish the depleted forest in Suswa, Mara and Mau ecosystems to achieve 10 percent tree cover.

Mr. Nkton said his county has suffered forest depletion mostly due to illegal charcoal production and uncontrolled grazing and agricultural activities.

“Our community solely relies on fuelwood for energy more so the women whose role as home caretakers are more involved in charcoal production and unfortunately suffer most due to drought effects,” he said.

Mr. Nkton, who was accompanied by several officials from the county requested KEFRI to assist with skills on tree identification, value addition and management practices.

“We would also like KEFRI to participate in our effort to bridge the information and knowledge gap since we know that the organisation has done massive research on trees and plants of social and economic value,” Mr. Nkton said.

He added that the County has passed a motion to establish a research and resource centre where knowledge and information on the resources will be accessible by the communities and investors.

Dr. Njuguna supported the idea and assured the delegates of KEFRI’s support in setting up such a centre where farmers and the pastoral community would also gain field training on trees and forestry management.

“Narok is one of the counties with numerous resources and restoring its forest cover will ensure

control of constant flooding and reduce the negative effects of climate change,” added Dr. Njuguna.

Narok is a tourism rich county and the gate way to the world famous Maasai Mara national park which is rated for its seventh wonders of the world’s wildebeest migration.

Lately, it has been hitting the headlines because of regular floods when it rains, cutting off transport to the Mara and the surrounding agriculturally productive areas.

Dr. Njuguna and Mr. Nkton agreed to engage in further meeting with County Governor and sign a Memorandum of Understanding (MoU) on future cooperation.



Mr Kamau Nyingi, a technician at KEFRI interacting with the Narok delegates during CHERP Open day at the headquarters, Muguga

Dr. Njuguna said that restoration and reversing forest degradation and other landscapes in Narok County should involve the National Government and stakeholders like county Governments, Universities, NGOS, Community Groups and the private Sector.

“KEFRI advocates for a collaborative approach to natural resources and environmental conservation and advices on the appropriate tree species to be planted in dry or semi-arid areas of the county,” she added.

Narok County is the home of the Mau forest complex, the largest remaining true forest in Kenya. The forest supports the livelihood of millions of people, through provision of water that also feeds the parks in the famous Masai Mara National Reserve. Excision of Mau forest reserves and continuous encroachment have led to the destruction of over 107,000 ha of forest cover over the last two decades, representing over 25 percent of the Mau forest complex.

KEFRI shines at Eldoret ASK show 2018



CS for Agriculture Hon. Mwangi Kiunjuri presenting a trophy to Ms. Pauline Bala, the Officer in Charge of KEFRI Turbo sub-eco region at Eldoret show

KEFRI Turbo sub-regional centre participated in this year's national Agricultural Society of Kenya (ASK) show in Eldoret from 7th to 10th March, 2018 under the theme 'Promoting Technology and Innovation in Agriculture and Trade.'

Rift Valley Eco-region Research Programme Director Dr. Robert Nyambati led the staff in the 4-day exhibition where the Institute was awarded a trophy for the best stand displaying Research and Development; second best in both Energy Saving and Conservation practices; Seed producing and Marketing.

The Institute displayed and demonstrated research technologies on production of high quality tree seeds, expounding on procedures for seed sourcing, collection, extraction, cleaning, storage, breaking dormancy, packaging and distribution. Tree improvement using various propagation methods, plantation establishment and management, site-species matching, tree pests and diseases identification, monitoring and control; technologies on management and rehabilitation of degraded landscapes and ecosystems; utilization and value addition of non-timber forest products such as indigenous fruits in the drylands including *Vitex payos*, Tamarind (*Tamarindus indica*) and Baobab (*Adansonia digitata*); and management of

invasive Mathenge tree (*Prosopis juliflora*) through utilization, propagation and utilization of Bamboo, which is a national flagship project.

One aspect that directly affects forests (both natural and plantations) is over-dependence on wood fuel as the main source of energy for the rural population. To overcome this challenge, KEFRI staff displayed technologies on energy conservation through the use of metallic kilns for charcoal production, improving charcoal carbonization recovery percentage, use of various energy saving stoves and production of briquettes from biomass or charcoal waste.

KEFRI collaborators who included herbal practitioners, honey processors and charcoal producers displayed their forest products and services. These stakeholders are among the primary beneficiaries of KEFRI's innovations and technologies that enhance the completion of value chain in forest product technologies.

KEFRI Central Highlands Open Day

Kenya will need a policy on engaging the private sector to participate in restoration of depleted forests and increase its speed in restoring the lost forest cover, to mitigate against changing weather patterns caused by human activities and climate change.

The Central Highlands Eco-region Research Programme Director Mr. Ely Mwanza made the remarks while addressing the media during this year's KEFRI open day at Muguga Head office on 22nd March, 2018.

"KEFRI has developed technologies to improve tree growth, reducing the time indigenous trees take to mature. The Institute has been promoting bamboo propagation and other variable tree varieties ideal for domestication on farm growing and intercropping with benefits such as restoring soil nutrients, medicinal extraction and other commercial uses," he further said.

Mr. Mwanza said there is need to modernize forest management through application of mechanized tree harvesting techniques and uprooting stamps left after clearing felled forest plantation. "Replanting of huge tracks of forest land is hindered by slow



Students interacting with KEFRI staff at Agroforestry stand during the CHERP open day event

human labour which takes too long to accomplish the task, given the short span of rain patterns and the urgency now being emphasized by the already lost forest cover,” Mr. Mwanza said.

He added that the Government should partner with the private sector to restore the forests in a sustainable way. “This eases pressure on government resources as the private sector facilitates and manages forests with the sole purpose of benefiting from the exercise.”

The event was attended by stakeholders and general public from eight counties that form the Central Highlands eco-region and three neighbouring ones.

Plant taxonomy

Plant taxonomy is a line of science dealing with identification and classification of plants on the basis of shared characters. According to Margaret Kaigongi a taxonomist is involved in various activities, among them studying the evolutionary relationships of plants and determining the correct botanical names for plant species.

A taxonomist advises agriculturalist on indigenous varieties that exist, and where they can grow best. A farmer needs a taxonomist to understand how to match crops with trees that will not damage them, while a pharmacist relies on a taxonomist for drug discovery. In the world of medicine, a taxonomist is important in facilitating innovation of drugs as most of them are made from plant extracts.

The recent malaria drug, artemisinin, which was isolated from *Artemisia annua*, or wormwood, a herb that originates from Asia, is an example of how taxonomy, pharmacy and medicine combine roles to come up with a solution to a problem that has been affecting people for a long time. Further, a taxonomist advises a conservationist on what trees or plants to recommend in preserving our ecosystem. A taxonomist also assists in preparing forest checklists for foresters.

Taxonomy plays an important role in climate change mitigation, conservation of ecosystems, bio-piracy control, and barcoding using molecular DNA, and environment impact assessment.

In taxonomy, one action leads to another. For example, when doing collections, one needs to get a fertile specimen, (one with either a fruit or flower) this helps to determine the flowering time of this plant. After collection, a taxonomist uses the findings to study whether climate change has had any impact on the plant by comparing it with the existing specimen.

Some of the challenges faced by taxonomist include; lack of funds by researchers to access research points, lack of modern facilities especially related to molecular work, most herbaria (taxonomist laboratories) are understaffed.

There are various stages of studying specimen and examining their qualities. The first stage is collection of a specimen, recording data take such as height, habit, location (GPS coordinates), date of collection, collector’s name, local name and uses of the plant.



Margaret Kaigongi a KEFRI research scientist (Plant Taxonomy) sampling bamboo seedlings (Source: Daily Nation)

The second stage is sorting to ensure validity of the specimen; this is followed by removed the excess moisture after which the specimen is dried using a special drier. After drying, mounting is done by covering the specimen with a species cover. Later, it is placed in a genus cover after incorporating it to other members of the same genus. Finally, it's laid in the herbarium cabinet depending on the family a particular species.

A Taxonomist can be self supportive establishing a taxonomist lab (herbarium) to offer consultancy services, training and identification. One can also start a botanical garden, recreational site or establish plant nurseries to offer quality planting materials to farmers, landscapers, conservationists and institutions.

Taxonomy is an unexploited field of study offering great opportunities. The course is offered in many universities at undergraduate and post graduate level. For work experience, one needs to be attached to institutions such as KEFRI, KALRO, National Museums of Kenya, Kenya Forest Service and ICRAF, among others.

International Day of Forests

The World Forestry Day also referred to as International Day of Forests is celebrated worldwide every year on the 21st of March. The day's objective is to increase public awareness about the values, significance and contributions of the forests in balancing the life cycle on the earth.

In this regard, KEFRI staff in Lamu Sub-centre marked the day by planting mangroves in degraded shorelines in Mokowe, Lamu County.

The event was organized by Kenya Forest Service in collaboration with various stakeholders including KEFRI, Lamu County Government. The County Deputy Governor, Hon. Abdulhakim Aboud Bwana and the County Commissioners Mr. Joseph Kanyiri graced the occasion which was also attended by County Secretary, County Executive Committee member in charge of Health, Environment and Sanitary Hon. Raphael Munyua, local Administrative Officers and the local communities.



Mr. Henry Komu, Officer in Charge KEFRI Lamu (centre) leading the community in planting mangrove seedlings

The Deputy Governor called upon the communities to plant more trees during the upcoming rainy season to overcome some of the environmental challenges and issues affecting the county stating that clean and secure environment is a prerequisite for a healthy and prosperous nation.

At the same time, KEFRI jointly with the Ministry of Environment and Forestry, Kenya Forest Service and other partner institutions celebrated the Forest Day, at Ngong forest where the Cabinet Secretary for Environment and Forestry Mr. Keriako Tobiko led the public in planting trees as well as creating awareness on rehabilitating forests and the environment.

Almost 30 percent of the total land mass worldwide is occupied by the forests containing over 60,000 tree species which are ultimately the great resources of food, fuel, essential oils, medicines, water, and woods for the population of about 7.5 billion people on earth.

Forests are the complex living community of the trees which provides home and shelter to a big range of animals and the soil beneath it. The Forests help to control our planet's temperatures, provide us with oxygen and absorb pollution. The surge of drought in most parts of East Africa has been caused by human action on forests.

World Forestry Day celebration provides a big opportunity to all the people to learn more about

their contributions in maintaining the well-being of forests. During this commemoration, people share their views and ideas, work together in tree planting exercise or any other initiative to incorporate the forests into future climate change strategies.



Cabinet Secretary Ministry of Environment and Forestry, Mr. Keriako Tobiko watering a tree during World Forest day at Kibiku in Ngong forest

In Kitui county, KEFRI in collaboration with Machakos University, Savanna cement, County governments of Kitui, Makueni and Machakos celebrated IDF by planting historic trees. The Chief guest Kitui CEC for environment and Natural Resources Hon. John Makau and Machakos CEC for education Ms Faith Wathome Kithu flagged off the event at Machakos University.

Indigenous trees were planted at Katoloni and Kivandini Primary schools, Mumbuni AIC and Kithini AIC, Chief Guest from Education Department Machakos County flagged off the tree planting exercise. The seedlings were planted based on the names of the place since they were named after the indigenous trees. The tree species planted were *Terminalia prunioides* (Kitoo), *Ficus* (Kyumbu), *Arythrina abyssinca* (Kivuti) and *Acacia melifera* (Kithii). *Terminalia prunioides* (Kitoo) was planted in Katoloni Primary, *Arythrina abyssinca* (Kivuti) in Kivandini Primary school, *Ficus*

(Kyumbu) in Mumbuni AIC and *Acacia melifera* (Kithii) in Kithini AIC. In order to support the tree-planting, stakeholders such as KEFRI- Kitui, Savanna Cement and Machakos County donated the seedlings. KEFRI, gave out tree species *Melia volkensii*, *Acacia kirkii* and *Acacia melifera*.

The Registrar of Machakos University Mr. J. Wamkoa, on behalf of the Vice Chancellor, emphasized the importance of tree growing and its benefits to the planet Earth. He urged the stakeholders to embrace tree planting since deforestation is setting in.

Hon. Wathome stated that Machakos County Government has embarked on planting millions of tree to increase the forest cover in the county. The CEC called upon the youth to take an active role in tree growing and not in sand harvesting and charcoal production which contribute negatively to the environment.

KEFRI-Kitui Deputy Regional Director, Mr Albert Luvanda informed the participants that institute will offer technical support in tree planting whenever requested.

Mr. Luvanda further urged the community to grow indigenous tree species such as *Melia volkensii* that is drought tolerant.



Students and the community planting tree seedlings at Katoloni Primary School

The International Day of Forests helped to raise awareness on the importance and benefits of tree planting both in rural and urban areas. It is therefore, recommended that all the public and private institutions to take an active role in raising awareness on tree planting countrywide as this action will help our country achieve the 10 per cent tree cover.

Tree planting Campaign in Kiambu County

Members of Muguga Ecosystem Research Community Forest Association (MERCFA) representing KEFRI and other stakeholders who manage Muguga forest participated in Kiambu County tree planting and awareness creation annual launch held on 7th March 2018 at Roromo swamp in Limuru, Kiambu County.

Kiambu County Governor HE. Hon Ferdinard Waititu who was the Chief Guest, rolled out the awareness campaign where over 5,000 indigenous tree species including *Prunus africana* (Muri), *Markhamia lutea* (Muu), *Juniperus procera* (Mutarakwa), *Croton megalocarpus* (Mukinduri) among other species were planted.

County Government of Kiambu staff, Limuru Water and Sewerage company, Kenya Forest Service (KFS), Water Resource Users Associations (WRUAs) of Kikuyu and Limuru Sub-counties, Community Forest Associations (CFAs) of Muguga, Uplands, Ragia and Kieni participated in the event. “My County Government in collaboration with state agencies will plant over one million trees during this rainy season, 2018,” said Waititu.

The Governor directed the County head of environment to engage youth neighboring the swamp to nurture the saplings till they establish.

“These saplings need care to ensure their survival and revamping of the swamp,” said the Governor. “Engaging the youth in development activities is one of the County’s agenda for creation of employment, poverty alleviation, and eradicating consumption of illicit brew in the County,” added the Governor.

The public benefited with over 2,000 seedlings of improved Avocado (hass variety) to increase food security and diversify farm produce.

Speaking at the same event the County Executive Committee member - Department of Water, Environment and Natural Resources Mr. David Kuria thanked all who volunteered in the event to which he said is a clear indication of their



Kiambu County Governor HE Ferdinard Waititu (centre) planting a tree at Roromo, Kiambu County

commitment in environmental conservation. Mr. Kuria emphasized on the importance of conserving the swamp and its surrounding noting that it serves as a water catchment area that supply water to river Kamiti and others.

Agroforestry Initiative in Turkana County

KEFRI in collaboration with Barefoot solutions, a Non-Governmental Organization (NGO) has taken social forestry initiative to increase forest and tree cover in Turkana County.

Barefoot solution is using permaculture to expand forestry in Turkana south.

The NGO sourced suitable agroforestry trees species from KEFRI Turkana centre and others from the community tree nurseries that included *Moringa oleifera* and *Melia volkensii*. The trees were planted at Nakukulas, Turkana South social forestry site for demonstration.

Kefri Turkana sub-regional programme has a massive project meant to rehabilitate degraded areas in Turkana and West Pokot counties. Some of

Forest Management Certification Course

KEFRI's core activities in the region is protecting indigenous trees, including Acacia varieties that are being exploited for firewood; control of the invasive Mathenge- *Prosopis juliflora* tree which is a threat to pasture growth, water points as well as land meant for irrigation, pasture management for livestock production.

Barefoot in collaboration with KEFRI is implementing an extensive agroforestry and dryland permaculture in the region to increase food security and improve livelihoods.



The co-founder of Barefoot solutions Mr Ivan Lieman and KEFRI Turkana OIC Mr. Jeseo Owino viewing the sketch map of the NGO trial site during a visit to assess trees performance in the area



A multiple bag with vegetables growing in wormery compost done by the community in Turkana

As a result, the community has benefited with skills on utilisation of wastewater for fodder production, establishing tree nursery, vegetable propagation units, demonstration beds under drip irrigation and sustainable charcoal production.

This initiative is anticipated to see an increase in number of agribusiness and capacity building opportunities as well as demonstration sites established by the community in conjunction with both public and private institutions.

Forest Stewardship Council (FSC) is an international non-profit, multi-stakeholder organization that focuses on enhancing environmental, social and economic forest management activities coupled with skills used to solve the day to day challenges within the forestry sector. The Standards Generating Body (SGB) contributes to the development of national standards of FSC that are applicable at the international levels.

Forest Stewardship Council held a three day Forest Management Certification course, from 19th to 21st February 2018 in Nairobi. Kenya Forest Research Institute (KEFRI) staff namely; Ms. Stella Gatama Muthoni, Mr. Jonah Kiprop, Mr. Joram Kagombe.

The FSC course content consisted of: Environmental awareness, Forest Certification, Overview of FSC, Structure of the FSC, Forest certification standards, Local adaptation of FSC certification standards, Interpretation of the 10 principles, 70 criteria and International Generic Indicators, The FSC certification process, Group scheme requirements, Controlled wood standards, Raising of non-conformances, Stakeholder consultation and Auditing techniques.

The major roles of FSC is to provide standards within the markets that enable maintenance of products and services that have complied with specific standards. Through measures, rules and regulations, accredited certifier plays a major role in ensuring that various stakeholder interests are addressed. Fourty certification bodies are accredited to certify FSC, of which only 2 are applicable in Africa.

Ten principles and 70 criteria are used respectively in Forest Certification for auditing to ensure integration of social, environmental and economic components.

The following are the five performance criteria used in forestry for determining the output of products and services; Hazards within the SPEQS are mitigated against using Hazard identification, Risk

assessment and Control Measures (HIRAC).

The HIRAC consists of two levels mainly baseline level that consists of Climate, Access, Site features, Trees and Terrain (CASTT) and specific CASTT for identifying specific hazards in a given compartment. Both HIRAC and SPEQS are counter checked using; Plan, Do, Check and Act (PDCA) management cycle.

Certification process is important since it addresses threats faced by the diminishing natural resources which have been triggered by overdependence of these resources by increasing population, hence calling for best management practice that contribute to forest management and governance. Through assessments, Corrective Action Requirements (CARs) are used to identify two levels of problems mainly major or minor within the certification process. Unattended to minor problems become major, whereas persistence of major problems lead to suspension of the certificate and eventual termination of the certificate within a year if not tackled.

Bamboo Training for Kibra artisans

KEFRI-National Forest Product Research Programme (KARURA) conducted an advanced bamboo training for farmers and artisan between 12th and 21st March 2018.

The International Network for Bamboo and Rattan (INBAR) sponsored the course to impact skills on propagation, management and utilization of bamboo. Other areas covered were processing of bamboo to make assorted products, handcraft technologies, tools and materials, opportunities and challenges associated with bamboo industry.

INBAR Project Coordinator Ms. Nellie Oduor officially opened the course. The participants were drawn from Kibra (KDI), Kenya Tree Farms, Babadogo bamboo group, Zambesi and Jomo Kenyatta University of Agriculture and Technology.

The trainers were Nelly Oduor, Samson Mogire, Charles Gitau and George Migom. In her remarks Ms. Oduor explored the overview of the status of bamboo in Kenya.

Bamboo belongs to a sub-family Bambusoideae of grass family. It is a fast growing plant and highly renewable. There are 4000 ways of using Bamboo among them furniture making, weaving for basketry products and other highly efficient means of utilizing bamboo.

Bamboo gives durable and very attractive products which compete with other wood products globally. In the history of China a chaircoach made 800 years ago, is still strong and attractive up date.



Training on bamboo propagation and harvesting (file picture)

The participants were informed, bamboo culms/ poles are susceptible to decay and attack by fungi or insects especially powder post beetles due to the high amount of starch in the culms. Such attacks give bamboo low natural durability. One way to extend the life of bamboo under use is through treatment such as soaking and seasoning. Freshly cut green culms are put into stagnant or running water or mud for seven days and later dried in a shade. During the soaking period, or seasoning treatment starch is reduced therefore improving the resistance against such destructors.

It emerged that bamboo industry is currently limited by the inadequate raw material due to the government ban on harvesting forest products, as well as lack of tools and equipment for process bamboo.

The participants pledged to be more creative, scale out bamboo farming and promote cottage industry in Nairobi County and other parts of the Country.

Documenting Ecological Good Practices in the Lake Basin

Quarries are increasing in the Lake Basin region due to removal of Murrum from the earth's crust for road construction, a move accelerated by the massive government infrastructural programmes.

Quarrying activities not only provide material for building and infrastructure, but employment, an important pillar of economic sustainability.

However, quarrying is a short-term action with long term environmental and health impacts affecting flora and fauna. These negative effects specifically lead to soil depletion and topographical alteration thus impacting negatively on the biodiversity among other natural resources. environment and social economic.

KEFRI staff at Lake Victorial Basin Eco-region Research Programme (LVBERP) are promoting forestry technologies for rehabilitating degraded land, enhancing land productivity as initiatives for mitigating and adapting to climate change and other sustainable natural resource management practices.

On 3rd March 2018, KEFRI staff jointly with KFS, Department of Agriculture and Livestock, as well as Water Towers project, made an excursion at Mr. Joel Akaki farm in Vihiga County, where farmland has been regained from a quarry.

The objective was to identify, collect and document quarry rehabilitation technology as one of the good practice in natural resources management within the region.

The activity was facilitated by JICA under the Capacity Development Project for Sustainable Forest Management (CADEP-SFM) Kenya for African Initiative for Combating Desertification to Strengthen Resilience to Climate Change in the Sahel and Horn of Africa.

A good practice is a technology, technique, an innovation or approach that has been tested, validated, and adopted by a number of end users with success in either combating desertification

KEFRI in partnership with ICRAF through Participatory Rural Appraisal (PRA) and Rapid Rural Initiatives (RRI) empowered Mr. Akaki

to rehabilitate the quarry using backfilling, landscaping, planting agroforestry tree species for border marking, woodlot and ornamentals, alley or hedgerow, wind breaks and fruit orchard.

In the steep parts of the farm, he constructed terraces or soil erosion control and retention ditches for water conservation. In the lower wet area of the farm, he established two fish ponds though he abandoned later due to theft of fish and planted more trees.

Mr. Akaki quips that he transitioned from the predominant maize syndrome to tree syndrome and envision planting trees in all the available land.

According to KEFRI Regional Director Dr. Jerald Amwattah, proper quarry rehabilitation has a positive ecological impact on biodiversity, soil



Field visit at rehabilitated quarry and data collecting using questionnaire and group discussion at Akaki farm

fertility improvement and conservation, vegetation cover, water quality and quantity, climate change mitigation and resilience.

It impacts socio culturally on food security, health, aesthetic values, availability of wood biomass and effects on women and youth with a positive economic impacts on income and livelihood.

Previously two good practices were identified and collected at Ayora farm in Siaya County and Nyabera in Migori County on 27th February and 16th January 2018 respectively.

Ayora farm has modeled Optimum Integration of Trees on Farm - with the technical assistance of KEFRI and SC VI Agroforestry. The farmer Mr. Odhiambo has integrated several agroforestry trees on farm for border marking, alley or hedgerow, wind breaks, fruit orchard, recreational park, woodlot and

Pension's Additional Voluntary Contribution

KEFRI Pension Administrator, Minet Kenya calls upon staff to boost their pension saving through Additional Voluntary Contributions (AVC). This is enshrined in the Retirement Benefits Act, Regulation 14 section 2 and the Scheme Rules.

The Scheme therefore has set out a strategy of ensuring members replace 40-60 percent of salary with their retirement income. This is underpinned on optimising scheme performance to ensure members earn positive inflation-beating performance as they approach their retirement.

The move has been necessitated by observations under various surveys conducted in the country, where it emerged pension scheme savings rank highly among other incomes received by retired citizens. During the surveys, 32.9 percent of retired senior citizens indicated pension income as the only source of income they receive in their retirement.

Members adopting the AVC will in addition to reaping and locking in the benefits of the positive scheme performance, enjoy savings on the tax payable from their salaries taking into account contributions are tax deductible up to a maximum of Kshs. 20,000.00. The following illustration helps in understanding this concept better;

Remarks	Without AVC	With AVC
Gross Pay	93,573.00	93,573.00
Contributions @ 5%	4,679.00	4,679.00
AVC - 5%	0.00 -	4,679.00
Taxable Pay	88,894.00	84,216
Tax Payable	17,262.60	15,859.20
Tax Savings		1,403.40

Key points

- A Member, through the secretariat office, signs a form authorizing the deductions of AVC, indicating either, a percentage of basic salary or a fixed amount to be deducted as AVC.
- Deductions are made from the payroll and remitted to the custodian; the AVC's are credited to the individual member's account, distinguished from the mandatory regular contribution.



Mathews Odhiambo Asuna (in shorts) briefing KEFRI staff during a visit at Ayora farm. Francisca Kwasa (in hat) showing harvested bamboo at her Nyabera farm

homestead ornamentals. He also constructed soil erosion control and water conservation structures and incorporated fish ponds and zero grazing dairy cows.

Nyabera farm has integrated bamboo as an alternative cash crop to tobacco. The proprietor Mrs. Francisca Kwasa aims at promoting bamboo in the lower tobacco regions while up scaling it to the upper sugar belt regions in Migori County.

During the farm visits data was collected through questionnaire and uploaded to the KEFRI knowledge management database for sharing information on the existing knowledge and experiences.

In addition, the information will be used in developing relevant dissemination materials such as; manuals, guidelines, briefs, leaflets and brochures for use locally and in the Sahel and Horn of Africa states.

It was evident that negative impacts can be mitigated through development and implementation of effective restoration strategies.

- The Sponsor does not participate in the AVC and does not therefore match a member's AVC.
- The income earned by the scheme is distributed equally to all contributions received from and in respect of the member, including AVC
- The AVC's is paid out as lump sum at retirement, incorporated as part of the one third (1/3) of the cash lump sum derived from mandatory contributions; it forms part of commuted lump sum benefit.

It is highly advisable that members should allow the selected basis of deduction of the AVC, to hold for at least a period of 12 months, running in line with the scheme financial year.

Pension-List of Retirees

The following persons exited from KEFRI service through the means hereby indicated in the table. We salute each one of them for commitment in service delivery during their time of engagement in KEFRI.

Name	P/ No.	Date of Exit	Exit Mode
Peter Dadi Mashauri	5052	1 st January 2018	Retirement
Gathura Wa Mwangi	5110	"	"
Lucy Nyakibia Kioi	5408	"	"
Mary Waithera Njogu	5525	"	"
Simon Lomuna Ngole	5645	"	"
John Mbari Nduti	5753	"	"
Geoffrey Mukundi Nganga	5800	"	"
George Achayo Omollo	5844	"	"
Julius Njogu Njoroge	5890	"	"
Peter Muiruri Kigomo	5928	"	"
Margaret Kanini Mutunga	5972	"	"
Simon Njenga Kamonde	6015	"	"
Harrison Mutuku Kyungu	6080	"	"
Moses Otieno Nyandiko	6118	"	"
Margret Kina Njagi	6244	"	"
Johnson Otieno Omweri	6319	"	"
Philomena Nyamvula Mwasambo	6368	"	"
Jarso Sarite	6477	"	"
Johnson Ochieng Were	6544	"	"
Joash Amakanji Situbi	6564	"	"

Name	P/ No.	Date of Exit	Exit Mode
James Odhiambo Nyanja	6598	"	Retirement
Clement Bosire Onyiego	6625	"	"
Sheuna Abdur Kadir	6736	"	"
Dickson Otieno Okumu	6748	"	"
Josephine Wanjiku Kanyori	6772	"	"
Charles Okwaro Wandere	6844	"	"
Simon Murira Gachui	5308	17 th January 2018	"
Carilus Okumu Gillo	6856	10 th February 2018	"
Dominic Mutune Mikile	5148	21 st February 2018	"
Josephine Wambui Kimemia	6197	1 st March 2018	"
Veronica Wambui Kamuoho	6838	31 st March 2018	"
Joyce Lihavi	6578	17 th January 2018	"
Erick Asava	7000	1 st March 2018	Resignation
Nicholas Nyakwana Riako	6933	19 th February 2018	Death

Demise



The Late Nicholas Riako Nyakwana

KEFRI fraternity consoles with the family of Nicholas Riako Nyakwana who passed away on 18th February, 2018. Until his death Nicholas served at KEFRI Londiani. He previously worked at KEFRI Muguga. His body was laid to rest on 10th March 2018 at Aroso village in Migori County.

May his soul rest in eternal peace.



Fruiting *Melia volkensii* from candid tree at KEFRI orchard in Tiva, Kitui county with the seeds (insert) Mr. Jonathan Kituku and Mr. Pius Matieka displaying a 4-year old *Melia* tree at Kibwezi in Makueni county



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