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National Environment Management Authority

NEMA Bags Continental Environmental Award



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Mamo B. Mamo, EBS
Director General, NEMA

NEMA Monitors Air Quality During Nairobi City Marathon

By Dr. John Mumbo



Director General Mamo B. Mamo, PS Dr. Chris Kiptoo explaining the real-time Air Quality measurement to H.E First Lady Margaret Kenyatta at the start of Nairobi City Marathon at Nyayo Stadium

The first edition of the Nairobi City Marathon, dubbed, the Uhuru Classic, took place on 8 May 2022 at the corridors of the Nairobi Express way. The marathon was officiated by H.E President Uhuru Kenyatta accompanied by the First Lady H.E Margaret Kenyatta.

During the Nairobi City Uhuru Classic marathon, Athletics Kenya undertook real time measurements of air quality of the City. This was done in partnership with the United Nations Environment Programme (UNEP), the Stockholm Environment Institute (SEI), and the National Environment Management Authority (NEMA).

The air quality monitoring exercise was led by the Director General, NEMA Mamo B. Mamo, who was accompanied by the Environment and Forestry PS Dr. Chris Kiptoo. The Authority set its mobile air quality

monitoring laboratory to measure the quality of air in the city.

This was the first marathon in Kenya where air quality was assessed.

Athletics Kenya has started embedding the principles of sustainability in its events in line with World Athletics Sustainability Strategy, a 10-year road map unveiled by World Athletics in April 2020. This in line with the Sports for Climate Action Framework, under the United Nations Framework for Climate Change.

This initiative aims at supporting and guiding sports actors in achieving global climate change goals.

In addition, the Nairobi Expressway is expected to ease traffic congestion thereby reducing vehicular emissions in the city.



Director General Mamo B. Mamo, PS Dr. Chris Kiptoo explaining the real-time Air Quality measurement to H.E President Uhuru Kenyatta at the start of Nairobi City Marathon at Nyayo Stadium

NEMA Bags Continental Award

The NEMA Director General, Mamo B. Mamo was awarded the prestigious Africa Public Sector CEO of the Year Award in Accra, Ghana at the 3rd Africa Public Sector Conference held on 13th May 2022.

The ceremony graced by H.E the Vice President of the Republic of Ghana Dr. Mahamudu Bawumia.

The award was to reward and promote Excellence in Public Sector in Africa.

Mamo also received an award for the Africa top 50 Public Sector leader.

NEMA Kenya received the prestigious award of Africa Environmental Regulator of year 2022.

High Commissioner of Kenya to the Republic of Ghana H.E Amb. Eliphas Barine was in attendance among other dignitaries.

While appearing in the National Television Station in Ghana, GTV Breakfast Show, Mr. Mamo revealed that the citizens and government officials has spoken about the ban on plastic bags decades before it was implemented.

He added that the discussion on the ban on plastic took a decade for all stakeholders participate in the process especially the manufacturers of the plastics as well as political leaders. The Authority had to educate the public on the dangers of using plastics.

"My hearty congratulations to you, Mamo B Mamo, EBS for being awarded the Environmental Regulator of the year 2022. This is indeed a great inspiration to the public Sector in Kenya, " CS Environment and Forestry, Keriako Tobiko stated.

Nema Feted For Excellence in Service Delivery

By Samwel Irungu



NEMA management and participants during awards ceremony at Michuki park, Nairobi

The Cabinet Secretary for Environment and Forestry, Keriako Tobiko has stated that the National Environment Management Authority is set to have more powers to prosecute environmental crimes when the Environmental Management and Coordination Act (EMCA) Amendment bill currently before parliament sails through.

The CS said this during an award ceremony for NEMA and National Environment Tribunal today at Michuki Memorial Park in Nairobi.

While awarding the NEMA board and management, the CS appreciated their hard work to deliver services to Kenyans amidst challenges. He also appreciated the support staff for their work which is hardly appreciated but contributes to delivery of services.

The CS noted that the award of NEMA as the Africa's Continental environmental regulator of the year 2022 is an indication of the good work being undertaken in the environmental sector countrywide which is being

noticed globally.

The event was also graced by Registrar of the Environment Tribunal Ann Asugah, who was representing Hon. Chief Justice, Martha Koome. The Chief Justice stated that environment as envisioned in the Constitution 2010 guarantees the right to a clean and healthy environment as an enforceable right. She urged participants to implore various ways in which environment can be improved.



Board Member, Samuel Nyangweso receives his award from CS Environment and Forestry, Keriako Tobiko

NEMA Ag. Chair, Dr. Lul Abdiwahid enumerated some of the achievements that the Authority has made in the last two years such as;

1. Reviewed the Controlled Substances Regulations, 2007.
2. 2357 Cases relating to environmental offences prosecuted.
3. Finalized the Lake Olbolassat, Ewuso Narok, Sio Siteko Wetland Management Plans.
4. Engaged the council of governors and county governments where 45 Committees have been gazetted.
5. Secured adaptation funds to support 11 Entities in climate adaption activities in 14 Counties.
6. Mobilized Kshs. 807Million from the World Bank to address issues of e-waste.
7. Planted 293,000 seedlings towards achievement of the 10% tree cover.
8. Public education and awareness on environment management.
9. Established an environmental licensing centre and online licencing platform.
10. Gazetted 106 environment inspectors from NEMA and the Counties.



NEMA Ag. Chair, Dr. Lul Abdiwahid receives her award from CS Environment and Forestry, Keriako Tobiko at Michuki Park



**NEMA Board,
management in a
group photo with
Environment and
Forestry CS Keriako
Tobiko during the
awards ceremony at
Michuki park**

As result of these remarkable achievements, the Authority has received several awards including; Strategic Development Goals (SDGs) Reporting and Implementation 1st Runners-Up for Yr. 2021, Public Sector Legal Department of the Year 2021 by the Nairobi Legal Awards, Africa's Environmental Regulator of the Year 2022. NEMA Director General, Mamo B. Mamo was also recognised as Africa's Public Service Sector CEO of the Year and also as Africa's top 50 public Sector leader of Year 2022 during the 3rd Africa Public Sector Conference & Awards in Accra, Ghana.

Speaking at the event, NEMA Director General, Mamo B Mamo remarked that as the principal supervisor and coordinator of environment matters in Kenya, the Authority has endeavored to offer customer focused service delivery in its processes that ensures efficiency and Ease of Doing Business. To ensure provision of environmental services to all Kenyans, the Authority operates in all the forty-seven (47) counties across the country.

The DG expressed his gratitude for being awarded the Environmental Regulator of the Year 2022 in Ghana in May this year. He added that the award affirms the commitment by the NEMA in ensuring a clean, healthy and sustainable environment.

The DG added that everyone should be responsible for their environment and ensure it is clean.



Environment and Forestry CS Keriako Tobiko (L), DG Mamo B. Mamo and Chair Dr. Lul Abdiwahid watering a tree during the awards ceremony at Michuki park.



NEMA management poses for a group photo after planting a tree at Michuki park during the awards ceremony

World Environment Day Commemoration

By Samwel Irungu

Together we can protect “Only One Earth”

The national World Environment Day 2022 commemoration was held today at Dedan Kimathi University of Technology in Nyeri County in Kenya.

The theme for this year's event was, "Only One Earth," and slogan, " Together We Can Protect It." The theme was a rallying call to the people to protect the planet from effects of climate change, biodiversity loss and pollution.

The event was led by the Secretary Administration in the Ministry of Environment and Forestry, Joel Kitili on behalf of the Cabinet Secretary, Keriako Tobiko. The CS noted that the country has taken steps to counter the triple effects of pollution, biodiversity loss and climate change.

"We need to stand up for our only home. We are running against the clock, we need to act now. Since we are the ones who have created the problems, we need to provide solutions to save our mother Earth," NEMA Director General, Mamo B. Mamo stated.

NEMA has enacted various regulations to protect the environment in the country. In 2021 alone, the Authority did over 2306 inspections across the country. The inspections ranges from Effluent Discharges License, plastic bags ban, Environmental Impact Assessment as well as environmental audits.

"The tripple threats to environment of biodiversity loss, climate change and pollution continue to ravage the world causing a threat to the human existence. We need to urgently protect the planet," NEMA Acting Chairperson, Dr. Lul Abdiwahid noted.

She added that recently NEMA was awarded as the Africa's Environmental Regulator of the year in Ghana. This was towards the Authority's effort in the ban of plastic bags back in 2017. As a result, the country has prvided a learning point to various countries in the region. Kenya is looked upon by many African Countries to offer guidance as well benchmarking on matters plastic pollution control.



NEMA Board member, Charles Mulila awarding Kamwenja Teachers' training college during WED event in Nyeri



NEMA Chair, Dr. Lul Abdiwahid making her remarks during Environment Day in Nyeri

Most Rev. Anthony Muheria, Catholic Archbishop, Nyeri Diocese stated that it is a religious duty to protect the environment as we are the stewards of the Earth. He added that it should be everyone responsibility to correct what is going wrong within our environment.

The Nyeri Governor, H.E Mutahi Kahiga was represented by the CEC for Environment and Climate Change, Kinyua Wanjohi. He noted that the County boast of its various initiatives it has put in place to protect the environment such as cleanups, tree planting and growing as well as protection of natural resources.

During the event, 2,030 indigenous tree seedlings were planted to mark the commemoration. A further 17, 000 was donated to the University to be planted at Tanyai Forest block in Muringato forest station through the adopt a forest initiative. According to the National Forest Resources Assessment Report 2021, Nyeri County leads with a tree cover of 45.17% and a forest cover of 40.89 %.



Environment and Forestry Administrative Secretary, Joel Kitili awarding a trophy to Dedan Kimathi University FC after winning the Dunia Moja football tournament .

Tree planting at Dedan Kimathi University during World Environment Day celebrations



Do A Little Thing To Protect Your Environment

WED Public Lecture

Each one of us has to do a little thing in protecting their environment. It should be individuals' responsibility to take care of their surrounding, Mr. Jagi Gakunju, an environmental conservationist remarked during a public lecture for World Environment Day at Dedan Kimathi University held on 3rd June 2022.

NEMA Director General, Mamo B. Mamo was represented by Dr. Catherine Mbaisi, NEMA Deputy Director, Education and Awareness. She noted that the World has once again come together under the theme, "Only One Earth" to celebrate World Environment Day as it was 50 years ago when the first World Environment Day was held.

It is a rallying call for the people to take individual responsibility to safeguard their environment for the current and future generation, she remarked.

Vice Chancellor, Dedan Kimathi University, Prof. Eng. Ndirangu Kioni stated that the University is passionately involved in the protection of the environment by tailoring some of their programs to incorporate environmental activities as well undertake various environmental initiatives with the community. This, according to the Vice Chancellor will enable the students to commercial some of the environmental conservation activities into viable income.

The public forum facilitator Mr. Gakunju, a Conservationist stated that if we don't look after this earth, we will surely die. We don't have anywhere else to go to.

Science is showing us things are getting worse as people keep fighting for resources. We need the youth to be empowered to come with innovative activities to address climate change issues.



Deputy Director Environmental Education and Awareness, Dr. Catherine Mbaisi speaking during a public lecture at Dedan Kimathi university

Community Forum- Adaptating To Climate Change



NIE coordinator, Wangare Kirumba consults with Rev. Fr. Peterson Ndegwa during the community Forum in Thome, Laikipia

A community forum was today held at Lechugu Secondary School as a buildup towards World Environment Day to be held on Monday 6th June 2022 at Dedan Kimathi University of Technology in Nyeri County.

The Authority through the Adaptation Fund had developed an adaptation village at the school.

The adaptation village aims at improving the livelihoods of the communities towards the climate change.

The project objectives is to create innovative approaches to climate change by; adoption of drought resistant crops and high value crops, increased food production through the use of appropriate and efficient irrigation methods and increased land productivity through conservation strategies and management technologies based on integrated ecological land-use systems as well as technological transfer.

The Authority in conjunction with various partners planted over 1,500 trees at Lechugu Secondary School. Speaking during the event, the National Implementing

Entity for Adaptation Fund in NEMA, Wangare Kirumba states that the project has helped the school and community to adapt to climate change.

"To help adapt, is to place resources into the hands of the community," Wangare stated. Avail a place to continue learning to adapt to climate change and provide various alternatives of livelihoods. This is what an adaptation village aims to achieve.

The Adaptation Village comprises of a salarised borehole, elevated water tank 10 litres, water kiosk, sanitation block, basic community training hall and demonstration site.

What can i do as an individual in the protection of the environment?, Dr. Catherine Mbaisi, NEMA'S Deputy Director Environmental Education and Awareness posed. She added that we should come together to empower the community towards creating resilience to climate change.

Desertification and Drought Day Commemorations

By Samwel Irungu



CS Environment and Forestry, Keriako Tobiko (C) watering a tree with NEMA Board members (L_R), Samuel Nyangeso, Charles Mulila, Chair Dr. Lul Abdiwahid and Dg Mamo B. Mamo

Over 2 million hectares of land has been invaded by Prosopis Juliflora commonly known as Mathenge and the plant is spreading at a rate of 15% per year. It has become national threat.

Environment and Forestry Cabinet Secretary Keriako Tobiko said this during Desertification and Drought Day national celebrations held today at Eldume Primary School in Baringo County.

The CS stated that the government has developed a National Strategy and Action Plan as the solution to Prosopis which lies in using it for production of charcoal among other uses. However, it must be done in accordance with the gazetted regulations.

Principal Secretary Dr. Chris Kiptoo said according to the National Forest Resources Assessment Report

2021, Baringo County is number 37 with a forest cover of 4.6% far below the recommended level.

The PS said the Ministry has identified 100 schools in Baringo County to benefit from seed distribution programme where they will receive 0.8 metric tonnes of seeds to grow tree seedlings.

The Governor H.E Stanely Kiptis said that County Government of Baringo has worked closely with the National Environment Management Authority to prepare a Baringo County Environment Action Plan. This important document has identified the natural resources in the County, their utilization and conservation status, and analyzed the exploitation trends. The Governor urged the locals to embrace the strategy by the Government to ensure that Mathenge benefits them.

The Chair, NEMA Board of management stated that the Authority has examined land use patterns in the County to determine their impact on the quality and quantity of natural resources. Further, NEMA in collaboration with the County Government of Baringo has prepared a status of the environment report for the county. This report gives a snapshot of the status and health of the natural environment and its inherent resources in the County.

She added that NEMA has over the years promoted awareness of the dangers of desertification and the appropriate use of its dry land resources. The Authority supports efforts to combat this and will continue offering regulatory and capacity-building support and any other form of support within its reach, to the County Government of Baringo and other counties, to ensure that the environment is well managed for all Kenyans.

NEMA Director General, Mamo B. Mamo stated that the goal of Desertification and Drought Day is to demonstrate that investing in healthy land as part of a green recovery is a smart economic decision not just in terms of creating jobs and rebuilding livelihoods, but in terms of insulating economies against future

crises caused by climate change, nature loss and drought.

He added that the current economic challenges that we are facing have reinforced how much we need our forests, drylands, wetlands, and other land ecosystems for food, for the green economy, for eco-tourism, and as a buffer against extreme climate events.

Governor Stanley Kiptis said that 75% of Baringo County is ASAL and it is moving to 80% due to the effects of climate change thanking the national government and its state agencies for supporting programs geared towards addressing desertification in the County.

Several other leaders present during the event included Principal Secretary ASALs, Micah Powon, Baringo County Commissioner, Mr Abdirisack Jaldesa, Deputy Governor Jacob Chepkwony, Baringo South MP, Charles Kamuren, former NHIF CEO, Simeon Kirgatty, board members and CEOs of SAGAs under the Ministry among others.

The theme for this year's celebrations was-Rising up from drought together which raises awareness on the need to act on the spreading of drought and



Environment and Forestry CS Keriako Tobiko flanked by PS Dr. Chris Kiptoo signing the visitors book at the NEMA exhibition booth. He was received by DG Mamo B. Mamo and Dr. Catherine Mbaisi

Save our Ocean, Protect our Future

By Evans Nyabuto



CS Environment & Forestry Keriako Tobiko (L) with NEMA DG Mamo B. Mamo at the Oceans Conference in Lisbon, Portugal

NEMA Director General, Mamo B Mamo represented Environment PS Dr. Chris Kiptoo at a side event during the UN Ocean Conference at Lisbon, Portugal.

The event themed “Depolluting Oceans through Controlling Trade in Plastic wastes and combating illegal traffic under the Basel Convention, was aimed at having discourse on how countries are implementing the Basel Convention guidelines on trade and trans-boundary procedures in their policies and strategies.

The DG said that like other countries, Kenya experiences heavy traffic regarding vessels and goods being transported, some of which are made of plastics or packaged using plastic. He said the huge manufacturing and import of plastics means that

oceans are very prone to pollution due to dumping on the high seas.

In order to combat illegal trade in plastic wastes, the DG mentioned that the Government is enhancing coordinated implementation and enforcement of the multi- environmental agreements that are relevant to monitoring and controlling of trans- boundary movements of hazardous chemical wastes including their sound management.

“We welcome the decisions adopted during COP15 of Basel that seek to ensure that trans-border shipments of all types of waste, whether hazardous or not, will be subject to prior notification and consent rules”, concluded Mr. Mamo.

World Ocean Day commemorations

By Carol Muriuki

The World Oceans Day is an annual event held every 8th June. The day supports the implementation of worldwide Sustainable Development Goals (SDGs) and fosters public interest in the protection of the ocean and the sustainable management of its resources in line with the United Nations resolution on World Oceans passed by UN general assembly in December 5, 2008 in Rio de Janeiro.

This year's theme was "Revitalization: Collective Action for the Ocean" The day aims at raising awareness on the need to sustainably use the Oceans and its resources.

In Kenya, the commemorations were held at Mombasa

Beach. The event included cleanups along the beach in line with the theme of "Revitalization: Collective Action for the Ocean" to raise awareness on the importance of keeping the beach free from litter.



NEMA undertaking clean-up at Mombasa Beach during World Cleanup Day commemorations

Turning drylands into highlands

By NEMA Nyeri Team

Is it possible to turn highlands into high deserts, or have drylands in the highlands? Think about it. Where would you classify Mukurweini Sub-county in Nyeri County, drylands/semi arid or high potential area? If you are wondering all about these, I might have answer sooner than later.

I was sailing in the same boat as you before World Day to Combat Desertification 2022 was held at Giathugu Vocational Institute along Kiahungu, Kabuta-Murang'a road and which is on top of one of the intertwined ridges of Mukurweini. It is one of the highest ridges in the area for from there you can have a panoramic view of almost entire south-western and southeastern part of Nyeri County as well as northern part of Murang'a County. "Surely, how did the organizer choose Mukurweini instead of Kieni which is traditionally known as dryland ever since?" my colleagues asked me. The organizer had transport logistics problem and our office had a privilege of arriving at the venue over an hour earlier than the former. I had no idea how we could have such an event in a place full of trees and producing so much food even as the country experiences a very short-long rain season.

WDCD 2022 was organized by the County Government of Nyeri in conjunction with Kenya

Forest Service, Upper Tana Nairobi Water Fund, Nyeri Water and Sanitation Company Limited and the local Community Based Organisations among others. NEMA Nyeri County office, Kenya Forestry Research Institute and Kenya Red Cross Society among other partners attended the event.

The question asked at the beginning of this write-up was answered by the Director-Water, Irrigation, Environment and Climate Change Ms. Yvonne Mathenge whose Department organized the event. To everyone's surprise, she gave some background information on Mukurewini Sub-county as a traditionally dryland. I concurred with her since I have been to the lower parts of the sub-county bordering Kirinyaga and lower Murang'a county towards Sagana areas.

The area near Sagana River although hilly is very fragile and even trees are removed and over-cultivation done, the land can become unproductive. In the light of this, it is possible to turn drylands into high potential lands but sadly it is very possible to turn high potential and food basket lands into arid lands thanks to the climate change phenomena, population increase and overgrazing. Take care of the bread baskets and upgrade drylands into food baskets.

Kajiado Spatial Plan developed

By Joseph M. Kopejo - CDE, Kajiado

Inadequate planning is one of the major constraints facing regional development in Kenya today. This is partly manifested by numerous unplanned and uncontrolled developments in our cities, towns and urban centers. It is apparent that planning has not kept pace with the development and expansion of our urban centers. In the rural areas, this has led to the unsustainability of activities such as agriculture, livestock farming and conservation, compromising productivity and occasioning challenges in the enforcement of environmental laws and regulations and increasing conflicts. The absence of planning has resulted in overcrowded urban centers, mushrooming of informal settlements, with limited or non-existent public utilities, leading to a near state of complete disorder. The outcome has been conflicting land uses, incessant traffic jams, unmanaged solid and effluent wastes that impacts heavily on both human and environmental health and general insecurity. Such a scenario has serious social and economic implications.

The Kenya Vision 2030 development blueprint recognizes that there cannot be sustainable development without well planned urban centers. It is anticipated that by 2030, over half of Kenya's population will be residing in urban areas. The migration of rural populations to urban areas is therefore expected to increase going forward. Within the context of Vision 2030, Kajiado County is projected to have 60% of the population residing in urban areas by 2030. The County Government has therefore prioritized planning of the entire County as a basis for achieving sustainable development. The County Government Act, 2012 requires that all County Governments prepare and implement County Spatial Plans (CSP). These are ten – year plans that are aimed at providing policy and special guidelines for development within the Counties.

In an effort to realize this aspiration, the County has now finalized the Kajiado County Spatial Plan (CSP) 2022 – 2032, which awaits the County Assembly approval for it to become law. The plan provides a structured framework for coordination and integrating sectoral plans and activities and seeks to support the systematic implementation of County development programmes. The plan intends to promote individual initiatives and investments while

safeguarding public interest. Above all, it will act as an instrument for initiating, guiding, monitoring and appraising County development activities. All other Government departments are expected to tap into the plan as they initiate and implement programmes and projects so as to enhance sustainability of their development initiatives. As a regulator, the Authority (N.E.M.A) will greatly benefit from the plan as it will make it easier to arrive at decisions when considering proposed projects across the County.

The plan, which was developed through a consultative process, provides for a detailed situation analysis, makes proposals and provides for a plan implementation strategy and a monitoring and evaluation framework. It further provides for land subdivision guidelines by categorizing various allowable land uses into mixed urban use, agricultural, ecotourism, mixed commercial use, pastoralism and conservation, urban use, residential use (high, medium and low density), mixed commercial and purely commercial use. Development guidelines are also provided and categorized into settlement (urban and rural settlements), conservation and protection areas (forestry/agroforestry zones, riparian zones and protected areas), agriculture (Intensive mixed farming zones, livestock development zones, Irrigation agriculture zones), industrial and commercial zones. All the zoned areas have minimum land sizes provided, permitted use/s and land use regulation measures prescribed.

In the environment and natural resources management sector, the plan proposes seven strategies aimed at addressing pressing environmental issues for the County. The strategies proposed cover disaster management for geologic, climatic and human disasters, solid waste management, storm water drainage and sewerage treatment, promotion of agro-forestry and green economy, wildlife conservation and tourism promotion, water resources management, water supply and sanitation and conservation of environmentally sensitive areas. The plan, once approved and implemented promises to be an important game changer in the environmental management and conservation toolkit in Kajiado County.

Waste to Energy Project in Kakamega

By John Maniafu, CDE Kakamega, James Ambani and Warren Girisi Waswa

Kakamega County has emerged as the first in the Country to launch an energy power plant as a way of managing the waste generated. The County is moving towards this energy power plant for more recovery of its waste and developing more sources of energy. The project was launched by His Excellency Hon. Dr. FCPA Wycliffe Ambetse Oparanya, Governor Kakamega County on 1st March 2022.

The project will be set at Mung'ang'a grounds in Mumias East Sub County. It is to be established in the partnership with a private sector and will be entitled VRH Kakamega Limited Waste to Energy Plant. The investor is VR Holding AB from Finland. The lease agreement will be a period of 30 years and will be renewed based on performance and relevance of technology used.

The primary objective of the project is to manage waste in the County. This is to be done in an environmental friendly manner. Energy will be produced by using solid waste as a resource by operating an affordable system and sustainable technology that is easy to maintain. All these being in line with the applicable laws and regulations and global standards. The estimated cost is 9 billion shillings from the start to completion. The county has given out 15 acres of land for setting up the project.

The land is at Mung'ang'a in Mumias East Sub County. The waste will be collected from: Commercial establishments in Municipalities, urban and rural centers; Institutions including schools, polytechnics, hospitals, colleges/Universities and prisons; Bagasse from jaggeries and sugar industries and from Homesteads – residential estates and rural homes. Waste from the Lake region Counties is expected to be moved to the plant for energy conversion.

Waste to Energy Conversion model

The model has a capacity of converting 400 tons of waste into energy per day. In the first phase the project will generate 10MW of Energy for a start which will increase gradually as the company engages neighboring Counties to supply more waste. The combustible materials in waste will be burned when they reach the necessary ignition temperature and come into contact with oxygen, undergoing an oxidation reaction. The

reaction temperature is between 850 and 1450°C, and the combustion process takes place in the gas and solid phase, simultaneously releasing heat energy. A minimum calorific value of the waste is required to enable a thermal chain reaction and self-supporting combustion (auto thermic combustion). Therefore there is no need for addition of other fuels. During incineration, exhaust gases are created which, after cleaning, exit to the atmosphere via a pipe or channel called a flue. These flue-gases contain the majority of the available fuel energy as heat. Excess heat from combustion can be used to make steam for electricity generation.

Anaerobic digestion (AD) is the decomposition of organic matter through microorganisms in the absence of free oxygen. AD occurs naturally under oxygen deprived conditions such as some lake sediments and can be used under controlled conditions to produce biogas. For that purpose a gas-tight reactor, a so-called anaerobic digester, is used to provide favorable conditions for microorganisms to turn organic matter, the input feedstock, into biogas and a solid-liquid residue called digestate. Biogas is a mixture of different gases which can be converted into thermal and/or electrical energy. The flammable gas methane (CH₄) is the main energy carrier in biogas and its content ranges between 50 – 75% depending on feedstock and operational conditions.

Benefits of the Project

The project will be beneficial to the locals, the County and the environment at large. There will be transition to a low carbon economy as it scales up to renewable Energy. Furthermore Climate Change mitigation through cutting down on greenhouse gas emissions. Electricity of over 32MW will be generated and will generally contribute towards cheaper sources of Energy. Waterborne and respiratory infections arising from solid waste will be minimized. It will also contribute towards livelihoods long the solid waste management value chain and considerably improve our solid waste management practices. Generation of employment opportunities in solid waste collection, transportation and processing and opportunities for cheaper energy. At first 200 people will be employed and the number will rise as the project continues to run.

Copper mining in Tharaka Nithi

By Joseph Kamau & Samuel Nyaga



Residents of Kathunuku village are hopeful that their livelihoods will improve greatly as investors move in to invest in copper mining in the area.

Despite the discoveries of presence of copper ores in the area in 1990's, they have remained unexploited. Investors have raised new hope to exploit and mine the resource which will go along to improve income the driest parts of Tharaka South Sub County.

Commercially viable copper ore deposits have been found at Kathangacini area in Kathunuku village Tharaka South Sub County and an investor Bemuka International (Kenya) Limited is exploring for commercial copper mining within the area, which is at artisanal level.

Copper is found in several minerals with varied elemental compositions. Examples of such compositions occur as chalcopyrite(CuFeS₂), bornite (Cu₅FeS₄), chalcocite (Cu₂S), covellite (CuS), cupriteoxide (Cu₂O), and malachite (Cu₂CO₃(OH)₂) among many other minerals. In Tharaka Nithi County copper minerals occur as chalcopyrite minerals and are found in Kibung'a, Maragwa, Marimanti and Kithiori areas.

Residents of the Tharaka are saying that despite the presence of such good copper deposits in the area, the extraction has not been exploited for economic growth. This is probably due lack of capital and technological requirement to establish industries in the area. They urge investors and Government to invest in mining to exploit the minerals to increase economic development in the area.

Hope is now rekindled as two companies have expressed interest in mining in the area.

25 nabbed in Marsabit over environmental violations

By Oloo Ochieng & Marsabit Team

NEMA Marsabit office held a joint compliance enforcement inspection on the 22nd of June 2022 within Marsabit town. The operation involved officers from the National Police Service, Marsabit Municipality, the County Government of Marsabit and NEMA-Marsabit. The inspection objective was to enforce compliance with various environmental regulations.

25 individuals from various non-compliant premises were arrested and taken to Marsabit Police station where they were released on bond pending arraignment in the Marsabit Magistrate's Court on the 28th of June 2022. Traders found using plastic bags were also arrested and also booked for the offence.

The inspection team also inspected Petrol stations, hotels, carwashes, garages, medical facilities within the Marsabit town several of which were found not to have submitted EIA or EA reports to NEMA and others lacking Effluent Discharge Licenses. Facility owners arrested included; GOF Hotel, Hashi Petrol station, Apollo Carwash, Sparkle Carwash, Shell Marsabit, Green Garage, Central Garage, Muluko Garage, ISMC Hospital, Equity Afia Health Centre, Nomad Hospital, Talent Medical Centre among others.

Some facilities were found to have violated provisions the EMCA (Waste Management) Regulations 2006. Garages were found to mishandle waste oil, Oil filters and car filters while hospitals were found mismanaging the biomedical wastes without any documentations as required by law.



Joint Inspection going on at Apollo Garage in Marsabit Town

Ting`ang`a Celebrates Environment Day

Michael Njiru, Kiambu County

The little-known Ting`ang`a village in Ndumberi at the shoulders of Kiambu Town owned the WED celebrations for Kiambu County this year.

The colourful event took place at Ting`ang`a primary and secondary schools. The event was inaugurated by the area Assistant County Commissioner (ACC), and NEMA Environmental inspector, Mr. Michael Njiru, who planted the first sampling. Aside from the sampling, a total of 1600 trees were planted including 400 indigenous trees like Olea Africana, Markhamia lutea, Olea welwischii, Podocafous latifolia, Prunus Africana and 1200 exotic trees including Cypress, Sulk oak and Whispering pine.

The event was celebrated by NEMA team, The Kenya Forest Service, Platinum credit, Kel chemicals ltd, Brookside Company and Ting`ang`a Primary and Secondary schools. This year's theme was "Only One Earth" and calls on all towards playing their role effectively while living in perfect harmony with nature- without proving a burden on it, embracing the concept of sustainability.

According to NEMA, the major threats to the environment in Kiambu County are plastic wastes which are making a slow comeback after being banned. "We have enforced measures and are raising awareness on the disadvantages of plastic waste, but anyone found selling, using or manufacturing plastic bags will be arrested and prosecuted in the court" Mr. Stephen Wambua, NEMA County Director said.

He further urged the community to take part in the enhancement of environment by planting trees, conserving water resources and ensure they rid of plastic wastes as well. It is our responsibility and we have that opportunity to protect our only Earth.

There were more than 200 pupils who took part in the activities, including pitting, watering and the actual planting of the seedlings. Further, 30 environment club secondary school students that took part in similar activity. Both the pupils and the students were excited to take part in the tree planting activity. All in all, the event was greatly colourful with synergies by all the participants and partnering organisations to conserve our natural environment and fulfilling the year's theme of "Only One Earth".

The world environment day is celebrated annually, on 5th June and is the United Nations principal vehicle for encouraging awareness and action and the protection of the environment. The national celebrations were also held on the 6th of June at Dedan Kimathi University of Technology, 2022.



Greening Mandera Town

By Ali Ismail

Mandera County Government has initiated several afforestation programs in Mandera County Municipality targeting public places such as major highways, streets and public institutions, where more than 60,000 trees were planted and maintained, of which the main beneficiaries were youth and women groups who were engaged in planting and provision of after-care services.

The County employed 1163 workers (casual workers who waters the trees, security team and supervisors) the casual staffs are paid monthly salary of Ksh 7000

while the supervisors and the security are paid Ksh 10,000.

The County Constructed 85 underground tanks to provide water storage in those public places.

The county also donated two water boozer to the two national school in Mandera town (Mandera Boyz Secondary School and Mandera Moi Girls Secondary School to improve the water supply to watering the trees. The impact of the afforestation is being felt by the communities.

Environmental Challenges in Laikipia

Daniyo Mosiany & Laikipia

Laikipia North Sub County is an arid and semi-arid area, mainly habitated by pastoral communities under taking livestock keeping, farming, tourism and private ranchers owning a number of ranches in the region. Land is communally owned by the members registered under different group ranches.

Being drylands the constituency is faced by enormous environmental challenges that needs to be addressed so as to bring land back to a sustained productivity, currently the Laikipia north rangeland has deteriorated to high levels due to increased population growth and over stocking leading to the following serious environmental challenges; Biodiversity loss, Pollution, Deforestation, Climate change, Desertification, Water scarcity, Prolonged drought, Over exploitation of natural resources especially sand harvesting, Poaching, Invasion of invasive species, Public issues of unclear air and water and Excessive soil erosion and poor soil conditions.

The mitigation levels towards these issues are still low they are done at community levels whereby the community leadership takes the responsibility to manage their group ranch for continued sustainability, in addition, with the help of Naibung'a conservancy under the northern rangeland trust the community is trying to focus on the preservation, protection and conservation of important flora and fauna.

Nevertheless, a group of professionals from the area managed to form a community based organization (ACTNOWKE- Action for Climate Transformation and Nature Observation and wellbeing in Kenya) which is committed to promote environmental conservation and fight against climate change in rural community set up and champions for sustainable environmental development and protection of natural ecosystem. regardless of these efforts there are still adverse environmental issues in the area of study.

Vetting of Scrap Metal Dealers in Busia County

By Rop J. Kipkoech -CDE Busia

Kenya has in the recent past witnessed an influx in vandalism of critical government infrastructure. The major targets of the vandals are electricity transformers, transmission lines, and rail and road infrastructure. The stolen parts are sold as scrap metal. This has led to damage of infrastructure and consequently massive economic loss to the country

In response to the menace, the government placed a moratorium on Scrap Metal Trade, announced by H.E the President during an address on 20th January 2022. The president directed the ministry of Industrialization to develop regulations to guide the trade.

The ministry has since developed the scrap Metal Dealers Rules, 2022. The Rules apply to collectors, agents, dealers, millers, smelters, transporters, steel fabricators, stockists of secondhand metal parts, motor vehicle salvage operators, electrical re-winders, local welding machine fabricators. The Rules establish structures of administration with The Scrap Metal Council at the National level and the Scrap Metal Multi-Agency Vetting committee at county level. The

mandate of the County Scrap Metal Multi-Agency Vetting committee is to vet all applications for trade in scrap metal in their respective counties.

Busia County Scrap Metal Multi-Agency Vetting committee recently undertook vetting of three applications for trade in scrap metal within Busia County. The team visited the storage yards and transfer stations to ensure that the businesses complied with the relevant laws. Amongst the mandatory requirements for licencing is compliance with the provisions of EMCA and the Waste Management regulations. It is mandatory for all applicants to have an EIA licence/ EA for their yard, a Waste Transportation licence and a Licence to operate a waste disposal site / recycling plant.

It is hoped that the vetting will regulate trade in scrap metal, reduce vandalism of critical government infrastructure and hence reduce economic loss resulting from theft of critical infrastructure. It will also help manage scrap metal waste and lead to a cleaner more sustainable environment.

Battles of North Eastern Frontier

By Zachariah Mwambi

Whenever the words “battle” and “North Eastern Frontier” are mentioned, what probably comes to mind of many people is the secessionist conflict in the North Eastern part of Kenya in the yester years – what is commonly referred as the “Shifta wars” or sporadic terrorist attacks by the Al-Shabaab militant group.

Not at all, there are other battles that are so insidious in their very nature and usually pose devastating effects on the local peoples’ livelihoods. We are referring to impacts of climate change. Climate change has led to extreme weather events in the North Eastern region. They include; drought that often lasts longer than usual, irregular and unpredictable rainfall, flooding and increasing temperatures among others.

To put this into perspective, on 8th September 2021, His Excellency President Uhuru Kenyatta declared drought in parts of Kenya a national disaster following the worsening drought conditions in ASAL areas and predicted below average short rains and called upon relevant government departments to undertake appropriate measures/response to prevent further loss of lives and livelihoods.

Fast forward, in December 2021, some parts of NE region, especially Garissa County were characterized by heavy rainfall that has never been experienced in the recent past. The resultant floods led to displacement of people and loss of livelihood marking yet another battle.

In summary, the episodes of extreme weather events-one after another, courtesy of anthropogenic climate change is what the people of NEF have to contend with. However, the battle is not all lost. The government of Kenya and various non-governmental agencies have initiated and continue to implement various measures to help mitigate impacts of climate change, as well as promote resilience and/or adaptation of the local people to climate change. Some of the thematic areas being addressed include; food security, water management, disaster risk reduction among others.

Artisanal Mining in Kom

By Andrew Ng’ang’a

Artisanal mining in Kom sub-location begun about four years ago and only locals were involved. However about one year ago, outsiders mainly cartels have invaded the area fuelling conflicts between the locals and the Non-locals.

Charri ward member of the county assembly (MCA) Hon. Ali Dima was in December last year quoted saying that the locals are being denied a valuable source of income by the invaders as they have taken over and brought mining equipment that are beyond the locals. These people are being supported by a few locals who are out to gain financially at the cost of the locals.

Hundreds of people used to benefit from mining activities as owners of mines, employers and employees of various mining activities, prospectors and brokers. The indirect spillover effects however remain uncertain and are likely underestimated due to limited information.

Despite the sectors contribution to the economy and government efforts to regulate it, artisanal and small scale mining remains largely informal and faces extreme risks.

On May 2nd 2022, the inspector general of the National police service via a gazette notice declared Kom sub-location, Billiqo location, Charri Division of Merti Sub-County in Isiolo county a disturbed area and therefore a security operation zone. The notice will remain in force for a period of thirty (30) days subject to revocation or extension. This was in connection to the proliferation of illegal firearms in Marsabit and mining activities in Kom.

Regulatory interventions intended to prevent natural resources from funding conflicts should be a priority. This should be done by expediting registration of community land and formalize the mining activities.

The alluvial deposits which is exploited cheaply using artisan tools can sustainably be done for however long the land is secured. This will see an end to a situation where minerals mined find ways in funding conflicts.

Machakos People's Park: A Famous Recreational Facility

By Parnwell Simitu, Regina Ondiko, Grace Maina & Florence Mwikali

Ever since the initiation of devolved Governments in Kenya, Machakos County has stood out and has become popular since Machakos people's park was launched. However, unknown to many people, Machakos people's park has "hidden" Environmental impacts which are not the point of focus when the glorious park is being mentioned. These impacts includes;

Firstly, the park requires large amount of water to run its daily activities. However, the large amount of water from maruba dam is not enough to cater for the numerous activities that are run in the park. This leads to higher demand for water resources to enhance running of the parks activities. The Machakos people's park has now led to competition of the limited water resource in the area a factor affecting the hydrological cycle of water.

Secondly, mass visiting of people from different places especially during events leads to creation of more waste which if not well disposed becomes hazardous to the environment. In as much as there are bins used for disposing solid wastes some people tend to be careless and dispose of their wastes in inappropriate places in the park which might be tedious to clean up by the workers. Solid waste management is a major issue in the County at the moment as dumping sites are few hence most institutions and waste transporters tend to dump their waste in places that are not really dumpsites hence an issue that has pose many risks to the local communities. T

Air pollution is simply any contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere. Since Machakos people's park is a place for recreational activities, during holidays so many personal vehicles visit the park a factor that obviously increases air pollution as most vehicles uses emit gases that affect our atmosphere. As conservationist we struggle so much to reduce pollution of the atmosphere as we are trying our best to reduce the rate at which the global temperatures are rising. UNEP estimates that 90% of urban air pollution in rapidly growing towns comes

from motor vehicles.

The people's park is adjacent the Maruba dam which is the main source of water supply in Machakos County, hence, as many people visit the park they interfere with the soil structure near the water source, a factor that leads to soil erosion. This factor leads to water pollution of the water resource. If the maruba dam is affected by soil erosion, its depth is interfered with and it becomes turbid hence making it unsafe for use by the nearby local community.

Machakos people's park is a recreational center where a lot of people visit for different entertaining activities, during events like shows there is increased production of noise which is caused by the speakers being used, people shouting and movement of different machines at different occasions. These if not well taken care of, lead to interference of the ecosystem around the park i.e. the Maruba dam and it will also affect the health of the community around the park.

In machakos people's park there are pavements put in place which are hard impervious surfaces which affect the hydrological cycle of the area. The increase in impervious or hard surfaces, including rooftops and pavement, decreases the amount of water that soaks or infiltrates into the ground. This increases the amount of surface runoff, a factor which have an effect on the environment.

As much as recreational parks are popular places for the public, they have many "hidden" environmental impacts that need to be identified early enough and mitigation measures put in place to ensure sustainable recreational activities.



Waste bin at people's park

Waste Audit and Expansion of Zonation in Embu

By Boniface Birichi & Elizabeth Ngotho

Embu County holds its first waste audit and its first expansion of zoned areas since 2008. These remarkable steps will improve the County's efforts in implementation of the ten (10) minimum points on waste management. The municipal board is making efforts to strengthen its capacity, the department of public health is creating and enforcing the infrastructure while the department of Environment is spearheading sensitization on proper waste management with the following efforts.

On October 2021, The Covenant of Mayors in Sub-Saharan Africa in collaboration with CECM, Urban Development, Housing, Lands, Water, Irrigation, Environment and Natural Resources developed Embu Integrated Solid Waste Management Plan (Embu-ISWM-Plan) 2022 – 2032. Since its inception, the first ISWMP technical committee was formed to determine waste generation trends and characteristic for Embu town.

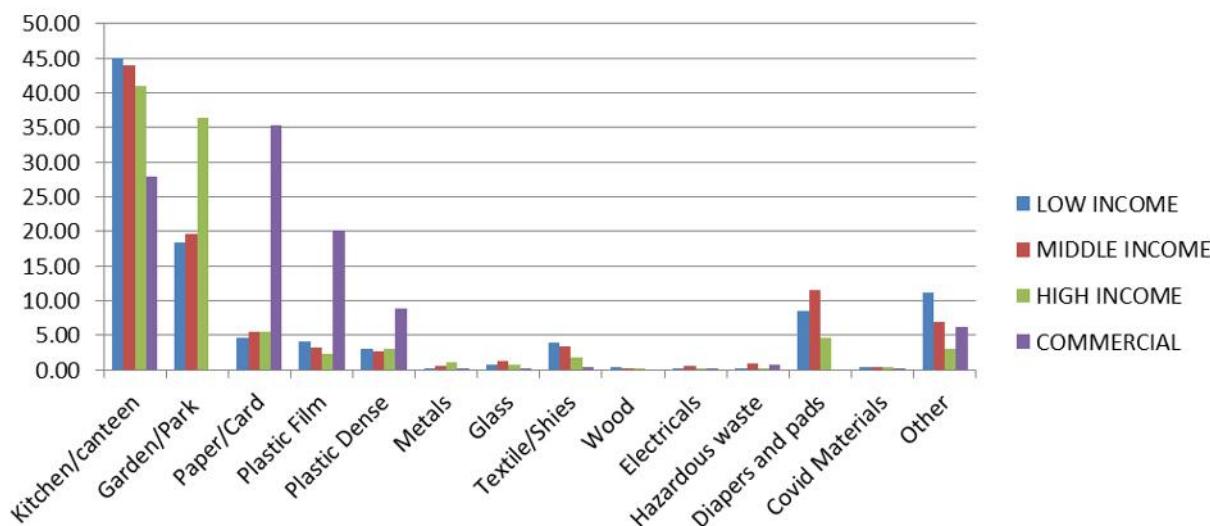
There is push towards facilitation of an autonomous Embu County Municipal to provide proper management of solid waste in Embu County. A pilot scope of Manyatta sub-County was established as Embu County Municipal in providing proper management of solid waste.

The current zonation of Majengo, Majimbo, Dallas and Blue valley required to be increased due to the increased population, increased pressure on land and unmanaged routes by private waste handlers.

The first meeting and second meeting were held on 11th and 12th April, 2022 respectively with attendance from CECM-Health; CEC-Finance and representing Chief Officer, Health; Department of Health; Office of the CDE- NEMA Embu; Department of Lands and representing Municipal Board; Assistant County Commissioner- Central Division and Department of Environment and Natural Resources. One of the resolutions made being the first in the County since 2008 was to draft, review and sign a Memorandum of Understanding (M.O.U) that provides standardization of waste collection fees/ tariffs, zonation and segregations of waste.

The M.O.U will include the Terms of Reference from relevant lead agencies in waste management. It also involved the office of the County Commissioner to promote public participation on waste management to the public. Therefore, the first and second meeting with Embu County Government was significant in the promotion of coordination as stipulated by law.

WASTE FRACTION PER SOCIO ECONOMIC CLASS (%)



A summary report showing waste traction in Embu County

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