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Ecoflash

News Magazine || July-September ISSUE 4, 2022

National Environment Management Authority

NEMA TO INTRODUCE MONTHLY CLEANUPS



NEMA sets up 25 adaptation villages:

The Story of inspiration to communities to adapt to climate change



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Board Member

NEMA to Introduce Monthly National Cleanups

By Samwel Irungu



NEMA Chair, Eric Mungai, DG Mamo B. Mamo, EBS, Lady Justice Addraya Dena Launch of World Cleanup and International Coastal Cleanup day at Ukunda, Kwale County

The National Environment Management Authority will work with various state and non state actors to introduce national monthly cleanups in the 47 Counties to foster a clean and healthy environment, NEMA Chairman, Eric Mungai has said.

The Chairman stated that he will seek the support of the President for the initiative to achieve the desired outcome all over the country.

The Chairman said this during the celebrations of World cleanup day and international coastal cleanup day held today at Absa grounds Diani, Kwale County.

“Every day is a clean up. Do not dump your waste and expect someone to collect it,” Mungai pointed out. He urged Kenyans to take the challenge and keep their environment clean.

The Chair alluded to the fact that every single person’s action can make a difference and that we can change our mindset and consumer habits and avoid, for example the single-use plastic products or encourage waste separation at source and promote recycling. Making this happen will us, the future generations and our planet.

The event was also attended by Lady Justice Addraya Dena, Kwale Environment and Land (ELC) Court.

The Environment and Lands Court joined hands with NEMA to celebrate 10 years since it was established in 2012. According to Justice Dena, the community should embrace the legal system to address environment and land issues instead of taking law into their own hands.

He postulated that its critical for the people to regard court issues and document with the seriousness it deserves. She noted that some people ignored court orders only to lament later when the judgement doesn’t favor them. He stated that locals should seek help in courts when faced with such environmental issues.

During the ELC@10, 3,700 trees were planted within Kwale County to mark the occasion. The Director General, NEMA Mamo B. Mamo remarked that despite having robust environmental laws in Kenya, we can do better if all of us take action and protect the environment to enhance compliance to the such laws and regulations. He noted that taking care of the environment is a collective effort.



NEMA Director General , Mamo B. Mamo, EBS made a courtesy call on Second Lady of the Republic of Kenya H. E Pastor Dr. Dorcas Rigathi on 22nd September 2022 at the official residence of the Deputy President to discuss her flag ship program on the restoration and rehabilitation of the Nairobi Rivers Ecosystems.

The restoration activities covering the entire basin will be supported by the Green Climate Fund (GCF) through NEMA under the project “enhancing Community resilience and water security in the Upper Athi River Catchment Area”.



He clarified that despite waste management having been devolved since 2013, the Authority continues to work with the 47 County governments to build their capacity to handle waste.

Mamo highlighted some of the laws that NEMA has put in place in management of waste. This includes; National Solid Waste management strategy, National Marine Litter Action Plan, launched during UNEA 5•2, Sustainable Waste Management Act, 2021 that emphasized on circular economy and cleaner production.

World Cleanup Day and the International Coastal Cleanup Day national celebrations are two events held over the course of a 24-hour period on the 3rd Saturday of September every year with a common objective of undertaking important events aimed at addressing the global waste management problem. these important events unite millions of people in different countries globally to think, review and address waste management policies and challenges affecting them.

This year's theme is "Sustainable Waste Management for a Clean and Healthy Environment" and the slogan "It starts with Me".

During the cleanup today, 1,200 kgs of solid waste was collected.

The celebrations were also attended by officials from Judiciary, of Kenya, Kwale County, Kenya Forestry Research Institute, Kenya Forest Service, Ministry of Environment and Forestry, Kenya Marine and Fisheries Research Institute.



Dignitaries during the tour of exhibition booths during the world cleanup celebrations



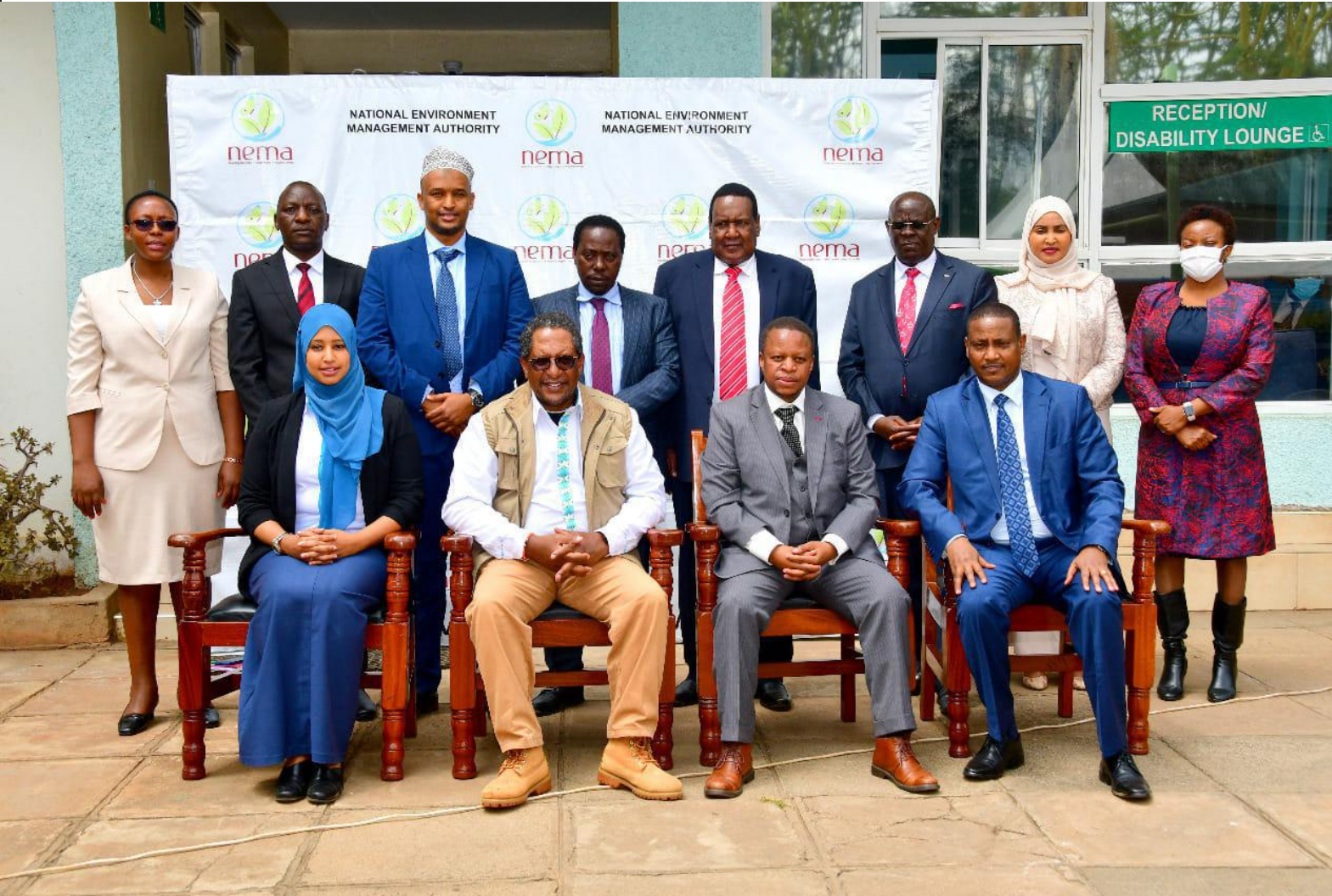
NEMA Chair, Eric Mungai and DG, Mamo B. Mamo, EBS during the cleanup at Ukunda, Kwale County



NEMA Board, Staff during the cleanup in Diani, Kwale County

NEMA Board Inaugurated

By Samwel Irungu



NEMA Board of management with Environment and Forestry CS Keriako Tobiko during the inauguration ceremony at NEMA HQ

The Cabinet Secretary for Environment and Forestry, Keriako Tobiko has today at the NEMA headquarters inaugurated the NEMA board of management which was recently fully constituted.

CS Tobiko challenged the board members to undertake the Authority’s coordination role fearlessly to ensure the mandate is achieved. He urged them to see challenges as opportunities and capitalize on its leadership to achieve the desired outcome for Kenyans.

“Despite expected government transition, the environment remains. It does not discriminate. It affects all despite the political affiliation”. The CS said

as he exuded confidence that the next government will build on successes achieved by the current government on environment.

The CS stated that the globe is currently facing the worst environmental challenges among them climate change and biodiversity loss as a result of environmental destruction and degradation. He added that pollution has reached unprecedented levels threatening the very human existence.

“We have exceeded the ecological limit of 1.6 meaning that we are already eating into the future of our children. Hence, we need to protect the environment by all means to create the regenerative capacity of the earth,” the CS added.



NEMA Director General, Mamo B. Mamo, EBS speaking during the inauguration ceremony

“The question that each one of us needs to ask is what difference have I made while in office,” CS Tobiko challenged the board members to go beyond and work for betterment of the environment.

He thanked them for their effort for conserving the environment especially implementation of the ban on plastics. Due to these efforts, the Authority has been recognised globally with the recent award of the Authority as the continental regulator of the year. The NEMA Director General, Mamo B. Mamo was also awarded as the prestigious Africa Public Sector CEO of the Year in Accra, Ghana during the 3rd Africa Public Sector Conference.

CS Tobiko congratulated the new team for the appointment into the NEMA board. He expressed optimism that the new board will add value to the Authority. He particularly asked the new board chairman, Mr. Eric Mungai to steer the performance of the Authority to desirable levels.



Environment and Forestry, Keriako Tobiko receives an artistic shield and spear from NEMA Board of Management Chair, Eric Mungai. Looking on are NEMA Vice Chair, Dr. Lul Abdiwahid and Director General, Mamo B. Mamo, EBS.



NEMA Chairman, Eric Mungai, MBS making his remarks during the inauguration ceremony at NEMA HQ

The NEMA Chairman, Mr. Eric Mungai appreciated the work the Authority has been undertaking in its coordinative role on environmental matters in the country. He added that the Authority will focus on sensitizing the public on environmental conservation to ensure that people do the right thing by protecting their own surrounding. "We would like to try and

leave the world a better place than we found it.

The NEMA Director General, Mamo B. Mamo enumerated some of the key Authority's achievements for the last two years such as the implementation of the plastic bags ban which is at 92%. The DG added that since the ban on plastics, Kenya has received 14 countries worldwide to benchmark with the country's successful implementation of the ban.

The DG added that the Authority has enhanced its regulatory role by automating its processes. For instance, due to automation of the processes, the Authority has been able to process 2,373 high risk projects, 27,528 medium risk projects and 8,814 Summary Risk Projects which is done within 5 days. The Authority has also harnessed the international funding related to climate change and other environmental initiatives such as Green Climate Fund, Adaptation Fund, African Environmental Health & Pollution Management Programme (AEHPMP)-World Bank among others.

The board member includes, Chairman, Eric Mungai, Vice chair, Dr. Lul Abdiwahid, members-Hon. Samson Nyongesa, Jeremiah Motari, Annie Syombua, Charles Mulila, Shanu Abudho, Chrisologus Makokha, Noordin Osman Jama, Dr. Rhonest Ntayia, Director General, Mamo B. Mamo.



A section of NEMA managers and staff during the inauguration ceremony

Gambella Wetland, A Community Gem

By Caroline Muriuki

Gambella wetland is located within Meru County about 10 Km East of Isiolo town, hence serves communities living in both counties. The wetland is located along Waso Mara River which draws its head waters from Nyamabene Hills.

The wetland covers approximately 300 acres and is recharged by several natural springs forming an important source of water during the dry period for the pastoralists, farmers and wildlife. The wetland ecosystem serves Nakuprat-Gotu and Nyambene conservancies as it occurs within a wildlife migratory corridor connecting Shaba/ Buffalo Springs and Meru National park.

In addition, this is an area of high interest due to the LAPPSET project. The proposed Isiolo resort, a super highway from Lamu cutting through the area, a railway line, oil pipeline and an inland dry port are among the developments expected to directly or indirectly impact of the wetland ecosystem.

A site visit by a team comprising of NEMA, NLC, CETRAD and UON established that the wetland ecosystem is under threat from encroachment by irrigated agriculture on the riparian area, habitat destruction mostly for charcoal and overgrazing by the high number of livestock and wildlife depending

on this habitat for survival.

In addition, there were previous efforts to secure the wetland in 2005/6 by the Arid Land Resource management project (Isiolo). The project fenced off the riparian area (the spring area) to protect it from encroachment and grazing. However, the fence was brought down due to lack of community and other stakeholders' engagement and participation coupled with accelerated vandalism which was a big menace in the country at the moment.

Consequently, the spring area became a free walk-in and -out for all, and eventually became completely encroached and over grazed leaving it bear and exposed to excessive degradation. As a result, the spring eyes dried up (for the first time in history) and the whole riparian has been overgrazed and now lies bear.

The team resolved to secure the wetland by bringing together stakeholders at national and county level leadership and community members in the Meru and Isiolo County to secure the wetland by adopting the wise use principle. This will also include documenting various ecosystem management interventions in the form of an Integrated Management Plan.



Gambella Wetland in Kenya

Inspiring Adaptation **Climate Change**

By Samwel Irungu



NEMA DG, Mamo B. Mamo, NIE Coordinator, Wangare Kirumba and GCA CEO Patrick Verkooijen at NEMA HQ during a courtesy call

The National Environment Management Authority as the National Implementing Entity for Adaptation Fund has developed 25 adaptation villages in 14 Counties countrywide.

An adaptation village is a facility that consists of a salarised borehole, elevated water tanks, water kiosk, sanitation block, community training hall and a demonstration site.

The facility is aimed not only to help the community with the infrastructure to access water and food but also transfer of knowledge on how to build resilience and adapt to climate change.

One such facility has been developed at Mosiro in Kajiado County. The facility has transformed the livelihoods of over 10,500 locals within the larger Maasai community.

The adaptation village has been built through Adaptation Fund at a cost of Ksh 10 Million. The NEMA Director General, Mamo B. Mamo urged the locals to protect the project for posterity and sustainability as they are the beneficiaries.

“The sustainability of this project is on your hands. NEMA has developed this adaptation village for you but the usefulness of the project will be determined by yourself,” the DG stated.

The Global Center on Adaptation CEO, Prof. Patrick Verkooijen stated that we need to work together to find solution to problems of climate change and adapt. “From now on, we have to walk together with the international community to address issues related to climate change,” Verkooijen stated.

He poised that the community’s resilience to problems related to climate change such as lack of water and food is an inspiration to the world that it is possible to adapt to climate change.

H.E President Uhuru Kenyatta was inaugurated as the Global Champion for the Africa Adaptation Acceleration Program at Leaders’ Dialogue in Nairobi University.

According Prof. Verkooijen, some of this funds will find its way to these communities who have suffered from adverse effects of climate change. He stated that he has been inspired by the resilience of the community to withstand effects of climate change and build on their livelihoods.



The Adaptation village training hall at Mosiro Adaptation village in Kajiado County



NEMA DG Mamo B. Mamo, EBS with staff planting a tree during the visit to Mosiro Adaptation Village

NEMA Establishes 50 ADAPTATION VILLAGES

Adaptation Village is a systematic support for learning, technology transfer and skills development for purposes of driving climate change resilience at community level.

An adaptation village consists of the following; a salarised borehole, elevated water tanks, water kiosk, sanitation block, community training hall and a demonstration site. The village acts as a centre for transfer of knowledge and expertise to the community to help them adapt to climate change.



NEMA Chairman, Eric Mungai, MBS speaking during the inspection of Mashuuru adaptation village

An adaptation village is a systematic support to communities that aims at training, technology transfer and skills development for purposes of driving climate change resilience at community level.

The system enables the communities to cope with emerging trends implicated by climate change.

NEMA has established 50 Adaptation Villages in 14 Counties spread across the country. Each of the Counties has one or more programme which are

implemented by each of the ten executing entities. The Counties includes; Embu, Garissa, Kajiado, Kilifi, Homabay, Kitui, Kisumu, Kwale, Laikipia, Machakos, Makueni, Marsabit, Muranga, Taita Taveta and Wajir

An adaptation village consists of the following; a salarised borehole, elevated water tanks, water kiosk, sanitation block, community training hall and a demonstration site. The village acts as a centre for transfer of knowledge and expertise to the community to help them adapt to climate change.



The projects are not only about water provision but also knowledge transfer on how to adapt to climate change by improving communities' livelihoods

Wangare Kirumba
NIE Coordinator



The Environment and Forestry Cabinet Secretary, Keriako Tobiko led an inspection exercise in one of the adaptation villages in Mashuuru, Kajiado County.

CS Tobiko urged the locals to prioritize environmental protection and integrate it into their 'Maasai' culture. He opined that environmental degradation has been an issue in the larger Kajiado County and the communities need to take charge of their environment.

Speaking during the inspection exercise, NEMA Chairman, Eric Mungai stated that NEMA will build the capacity of the community around the Adaptation Village in Mashuuru to enable them learn from other successful projects countrywide and improve their livelihoods through integration of pastoralism and farming.

The NEMA Director General, Mamo B. Mamo was represented by the NIE Coordinator, Wangare Kirumba who stated that the Authority has established 50 Adaptation Villages in 14 Counties in Kenya through adaptation Fund program.

The borehole drilled at Mashuuru has a capacity to produce 24 cubic meters of water that is sufficient for the locals' needs. The water together with other infrastructure of the project will enable the locals to water their animals as well as undertake farming.



NEMA board members planting a tree during the event in Mashuuru, Kajiado County.

Handling e-waste in Kenya

By Marvice Wanja



NEMA staff during an inspection exercise

The discovery of electronic gadgets such as mobile phones, laptops, televisions has brought a breakthrough globally but with it came a disadvantage, e-waste. E-waste is discarded electronic devices or appliances which are no longer useful.

According to a World Economic Forum research, E-waste is now the world's fastest-growing trash stream, with an estimated waste stream of 48.5 million metric tons in 2018. Comparing that to previous trends, it appears that by 2023, there may be an estimated 61 million metric tons generated. In Kenya, electronic waste is the fastest growing waste component, with an estimated 51,300 tons of electronic waste being generated annually. E-waste is emerging as one of the most critical environment challenge globally, regionally and nationally.

This has led to the creation of The African Health and Pollution Management project which is a five-year Global Environment Facility sixth framework funded project in five African countries namely; Kenya, Tanzania, Zambia, Ghana and Senegal with

World Bank as the implementing agency. In Kenya, the National Environment Management Authority (NEMA) is the executing agency where the project's main objective is to strengthen institutional capacity to manage and regulate e-waste and related UPOPS in Kenya.

E-waste has become an issue that has to be dealt with thoroughly as it is posing an environmental challenge. Many people are ignorant and unaware of the threat posed by e-waste which has caused an accumulation of e-waste reaching an unsustainable level and owing to management challenges, they are becoming a major source of environmental pollution. E-waste is often mixed with other municipal waste and disposed at open dumpsites where it is treated through open burning. Such open burning for e-waste disposed is the significant source of polybrominated Diphenyl Ethers (PBDEs), polychlorinated Biphenyls (PCBs), Hexabromocyclododecane (HBCD), dioxins, furans, cadmium, beryllium and Lead release to the environment which can cause severe human health and environmental hazards.

In responding to the e-waste concerns, this project will be collecting data in four cities namely Nairobi, Nakuru, Kisumu and Mombasa. This will be carried out in identified dumpsites, residential and industrial areas. The air pollutants samplers have already been placed at NEMA headquarters, NTSA offices and Dandora dumpsite. The air pollutant samplers measure air quality and determine what necessary safety precautions needs to be taken.

The challenge of handling e-waste is something everyone needs to become aware of and make a commitment to doing.

This starts by being aware of how to recycle and dispose of e-waste, extending the life of our electronics, buying environmentally friendly electronics, donating used electronics to social programs and creating awareness of what knowledge we have on recycling and reducing e-waste.

NEMA to protect small scale miners

By Courtesy

The National Environment Management Authority (NEMA) will prioritize environmental protection for artisanal miners in Taita Taveta County.

Led by the NEMA's Board Chairperson, Mr. Eric Mungai, the board was awed by the county's riches in natural resources but cited a lack of policy for protecting the environment as an impediment that could derail success in the small-scale mining sector.

"We're awestruck by the natural riches this county is endowed with. However, we cannot close our eyes to the issues of protecting nature.

There's no proactive framework to protect the environment and I think that's where our work as a board will start," said Mungai.

The chairperson emphasized that the tour was necessary as the incoming board would want to take head on the environmental challenges occasioned by mining activities and create a sustainable avenue for social prosperity and economic development in the county and country.

"We want to go to the office knowing the challenges on the ground and come up with practical solutions to the environmental challenges from mining activities.

We aim to create a sector that is environmentally, socially, and economically sustainable," added the official.

Small-scale miners at Kamtonga and Mkuki mines

in Mwatate Sub-County are usually confronted by environmental hazards such as sinkholes, soil erosion, biodiversity loss, and water and soil contamination that put their lives at risk, according to Oscar Mwangola, the Mining Manager at Kamtonga mine.

"Every day is a walk of faith for the miners as they face a plethora of environmental hazards. We're dealing with the risks of soil and water contamination and biodiversity loss," said Mwangola.

Taita Taveta is financially constrained and cannot have robust projects to protect against environmental degradation. The lack of support from stakeholders has doomed any efforts to have proactive measures to limit and reverse the damage done to the environment during mining activities.

"Most of the miners here do it on a small scale basis; thus, do not have the financial muscles to put up comprehensive environmental protection measures. Lack of support by the key players has worsened the situation here," said Mwangola.

Taking note of the challenges, NEMA's chairperson of the Technical Committee, Charles Mulila assured the miners of renewed efforts to help them conserve nature and a raft of other measures to not only make their activities safe but also conserve the environment for the future generation. "We're now aware of the specific challenges you face here. We will act on them," said Mulila.

NEMA Showcases Environmental Technologies at Nairobi ASK Show

By Samwel. Irungu



The NEMA exhibition booth

The Nairobi International Trade Fair opened its door to the public at Jamhuri Park in Nairobi for a week-long exhibition from 26th September 2022 after two years of break due to the Covid 19 pandemic.

The theme of the trade fair was; ‘Promoting Innovation and Technology in Agriculture and Trade’.

The show provided a platform that enables various stakeholders in agriculture and related sectors to share information and knowledge to address the changing agricultural needs.

The Deputy President, H.E Hon. Rigathi Gachagua officially opened the 120th Nairobi trade fair edition citing agriculture as the key driver of Kenya’s economic growth.

The Deputy President was accompanied by Nairobi Governor Johnston Sakaja among other officials.

At the NEMA stand, the Authority showcased various environmental technologies that are critical in advancing agriculture and trade in the country.

The Authority also stationed its Mobile Air Quality Monitoring laboratory to showcase to the public how the laboratory undertakes air quality measurements in real time to inform the Authority’s enforcement actions in a bid to provide a clean and healthy environment.

The stand attracted several high profile dignitaries who were particularly interested in Environmental Performance Indexes in their respective Counties, air and water quality monitoring, environmental laws and regulations in Kenya among several other publications and technologies.

The Authority also partnered with the ASK to provide branded bins in all routes to manage solid waste within the show ground.

PICTORIALS



Board members; Charles Mulila (R), Dr. Rhonest Ntaya undertaking cleanup at Diani during the World Cleanup day celebrations.



NEMA Chair, Eric Mungai peruses through some of the publications at the NEMA booth during the Nairobi ASK show. He is received by Eric Deche.



NEMA board members, Noordin Osman signing the visitors book at the Nairobi ASK show



NEMA DG Mamo B. Mamo and GCA CEO Patrick Verkooijen with children at Mosiro Adaptation village

Newton Osoro fixing the air quality mobile lab at ASK ground



NEMA's Catherine Mbaisi hands over an EPI to Senator Uasin Gishu, H.E Jackson Mandago during the Nairobi ASK show.



NEMA Management team during the Board inaugural by CS Environment and Forestry



NEMA's Joshua Mutiso holding the Kenyan flag high during clean-up day procession in Diani



The management and staff bid Farewell to one of the longest serving staff, Betty Nzioka



Protect your environment, congregants told

By Vivian Busolo & Emmanuel Nissi



NEMA's Anne Theuri (C) presents some of the donations to the Liberty Christian Centre leadership during their annual conference.

NEMA participated in the just concluded Leader-Shift Conference 2022 which took place at the Redeemed Gospel Church, Liberty Christian Centre in Nairobi.

The annual event was hosted by Bishop Dr. Kepha and Rev. Rose N. Omae who are the presiding ministers of Liberty Christian Centre. The event took 4 days; from 21st September to 25th September under the theme Equipped Leaders for Organizational Transformation. The event was based on teaching the participants on how to deal with leadership and the challenges that come along with it.

As part of the Authority's CSR, NEMA was among the

sponsors of the conference. The Authority donated branded waste bins to the Church and 25 branded polo t-shirts which were presented by Anne Theuri among other monetary support.

The Authority also took the opportunity to educate the congregation on the importance of environmental conservation especially waste segregation at source and taking responsibility for one's environment.

Other issues addressed were on licensing regime by the Authority, devolved environmental functions such as noise regulation and waste and environmental incidences management.

Significance of Cherangani Hills Towers

Richard Kering-West Pokot

Cherangani Hills is one of the five major water towers in Kenya which includes Mt Kenya, the Aberdares, Mt Elgon and the Mau Complex water towers. The Cherangani Hills extend across three counties namely Elgeiyo Marakwet, Trans Nzoia and West Pokot.

It is a twin tower with its waters draining into two basins, that is Kerio Valley basin which end in Lake Turkana and the Lake Victoria basin. The rivers that drains to Lake Turkana from these hill includes Muruny, Weiwei, Lomut,amd Kerio. Muruny , Weiwei and Lomut joins together downstream and is part of River Turkwel which drains into Lake Turkana.

On Lake Victoria basin, these hills are the source of River Moiben and Kimoson which is part of River Nzoia that drains to Lake Victoria. Cherangani Hills form a critical source of livelihood to the pastoralists and agro-pastoralists West Pokot, Elgeiyo Marakwet,Turkana and Trans Nzoia county as permanent source of water.

It also source of water to urban towns as, Eldoret, Iten, Kitale, Kapenguria and even Webuye in Bungoma County. It harbors a wide range of indigenous vegetation and plantation which provides source timber and medicinal plants for communities living around these hills such as the Pokot, Sengwer, Sabaot, Elgeiyo and the Marakwet.

The indigenous species of trees found here include *Prunus africana*, *Olea africana*, *Podocarpus gracilior*, *Croton microstachyus*, *Croton megalocarpus* *Acacia abbyssinica* among others. Plantation trees found here includes *Eucalptus saligna*, *Cupressus lusitanica* and *Pinus patula* .

The forest is a source of natural honey as communities living around these hills practice apiculture as a means of alternative livelihood. It also provides alternative controlled grazing area especially during dry season.

Birdlife in the Cherangani hills is quite immense. It is the hone of endemic birds and other wildlife such antelope-Sitatunga, leopard, hyenas among others. It

is the source of water for Saiwa National Park which boasts of hosting the rare antelope-Sitatunga. Despite of the ecosystem playing a very significant source of livelihood, there are anthropogenic activities that have threatened its existence. These include critical human encroachment.

The communities living around the catchment especially in West Pokot and Elgeiyo- Marakwet at Lelan and Embobut respectively have almost depleted the natural forest through illegal settlement and exploitation of natural resources.

Due to persistent encroachment there has been loss of biodiversity occasion by clear felling of trees without any afforestation programmes either on farm or within the gazetted site. Illegal grazing also has affected vegetation succession due to underground grazing.

Climate change cannot be left out in degradation of Cherangani hills. The communities living around have reported that some plant and animal species including herbs have disappeared over time for unknown reasons.

It is hope that the multi-agency programme launched recently by the NETFUND in collaboration with Italian government on conservation and rehabilitation of Cherangani hills ecosystem will provide a sustainable management and utilization approach for this crucial water tower.



Part of de-vegetated site of Cherangani hills at Lelan West Pokot county

Restoration of Mt. Elgon Forest

By Vincent Mahiva, CDE - Bungoma

Mount Elgon Forest Ecosystem is one of Kenya's five major water towers and the second highest mountain in the country. It is an important catchment for River Nzoia, which drains into Lake Victoria and River Turkwel which drains into Lake Turkana.

It was declared a Biosphere Reserve by UNESCO in 2003 in recognition of its significance as a water tower and biodiversity reservoir.

The ecosystem is gazetted as a montane forest reserve (73,705 ha) managed by the Kenya Forest Service, a national park (16,916 ha) managed by the Kenya Wildlife Service and a nature reserve (17,200 ha) managed by Bungoma County Government. Over the years, the area surrounding the forest ecosystem has experienced a surge in human population mostly as a result of immigration, increasing the human population density to about 600 people/km².

A majority of these are poor peasant farmers who depend on the forest for most of their subsistence needs. Consequently, most of the households that live 0-3 km from the forest have converted large swaths of the mixed montane forest that borders community land into farmland significantly reducing the forest cover. The situation has led to considerable levels of forest disturbance and degradation, which have significantly affected the floristic and structural composition and water catchment functions of the forest ecosystem.

Loss of forest cover – deforestation activities including introduction of 'Shamba System' has resulted in loss of forestland occupied by both plantations and indigenous forests in Mt Elgon Forest. Burning of charcoal and search for building constructions by residents has also impacted in the loss of glorious and giant trees like Elgon teak (*Tectona grandis*), *Olea* spp. Its estimated that 1ha of bamboo forest cover has been destroyed in the search for firewood by women and men neighboring the forest.

Soil loss – soil erosion is the major problem in the many degraded forest resulting in sedimentation of the water systems downstream. Mt Elgon is an important water tower for rivers that traverse Bungoma County and

supply water for domestic use. Soil erosion upstream has led to siltation of the river water thus accelerating the demand for water treatment chemicals as well as reducing the lifespan of water pumping systems.

Degradation of water catchments areas and flooding – massive and intensive run off from the water catchment areas during heavy rainy seasons is associated with flooding in the Nzioa River Basin. This has caused loss of human and animal life, damaged property; increased cases of water borne diseases hence enhanced abject poverty to the local and affected communities. There is also evidence of expanded width of riverbanks affecting the size of riparian areas.

10% Tree Cover Initiative- NEMA, Bungoma has participated and collaborated actively with other relevant lead agencies and community in ensuring the nationwide objective of 10% forest cover. Bungoma County has planted a total of 450,000 tree seedlings since the inception of the directive. During the world environment day hosted at Kenya Medical Training College, Bungoma Campus witnessed at least 3,000 tree seedlings planted and 2000 tree seedlings donated to communities, primary and secondary schools.

Environmental stewardship and awareness – Bungoma County Director of Environment has had frequent media interviews where he has conversely sensitized and empowered Bungoma residents on the importance of conserving, protecting and restoring existing natural resources and to exercise environmentally sound practices including proper sand harvesting, waste management, agricultural practices along rivers, farm forestry. This will guarantee environmental quality, integrity, governance of natural resources in a sustainable manner.



Mt. Elgon



Participants during the International Primates Day at Karura Forest

By Jojina Minis

Conserving primates

International Primate Day is celebrated annually on 1st September. The day is dedicated to preserve and protect primates of all species including chimpanzees, monkeys, orangutans, gorillas among many more. The day was first celebrated in 2002.

This year, the celebrations were held at Karura Forest. NEMA participated in the celebrations where other stakeholders such as Institute of Primate Research, Kenya Wildlife Services, Kenya Forest Service and Friends of Karura among other stakeholders participated in the event.

The theme was “Restoring forest habitats and creating awareness to mitigate conflicts and climate change for long term survival of primates.” Some of the activities included a primate walk to catch a glimpse of the Mt. Kenya guereza relocated from Kipipiri in 2015 to mitigate human/wildlife conflict in the area.

The day celebrates primates, advocates for the

enhancement of their welfare and calls for conservation of primates species facing imminent risk of extinction locally, nationally and globally.

20,000 indigenous trees were planted during the event to enrich the primate habitats.

Primates have been traded long distance and cross border for millennia. The most immediately apparent use for primates is as food, but their uses go well beyond their basic value as a protein source. One of the most important drivers for the international trade in primates is the biomedical industry, with China and Indonesia acting as the most significant exporters and the USA as the largest importer.

However, the nature of international primate trade has changed over the years and commercial trade in wild-caught primates. However, this remains a major impediment to the conservation of selected species.

Impacts of Animal Carcasses on Environment

By Boniface Wanga-Tana River

Natural disasters like drought and floods or disease outbreaks can result in an unexpected large number of dead livestock and present a challenge in the disposal of carcasses. Quick and efficient responses are required to deal with carcass disposal.

In Tana River County, pastoralists just like in many other ASAL areas suffered serious loss of livestock to drought. The region has not received adequate rainfall close to three seasons and this led to serious loss of pasture. The pastoralists would walk unimaginable long distances in search of pasture and water for both man and livestock.

In the process, weak, sick and young livestock succumb to the very high temperatures, lack of food and water. The pastoralists, vulnerable and lacking any choice, leave the dead animals along the way as they proceed to forage.

During this period, large number of animal carcasses would be seen along the major roads from Minjila to Lamu, Minjila Madogo and in Hola.

When the carcasses are buried and undergo decomposition processes, nutrients, pathogens, and other materials may be released into the environment. These substances may be degraded, transformed, lost to air, or immobilized, posing no environmental impacts.

However, some may contaminate the soil, surface water, and groundwater bodies. Elevated levels of BOD, NH₄-N, TDS, and chloride have been found within or very near carcass burial trenches (Glanville, 2000). These carcasses are also washed away soon rains pound on the areas into nearby water sources like Tana River and also clog other natural water ways and storm drains.

Depending on the size of the animal and environmental conditions in the area of its death, the dead animals' stench smell will remain until the animal carcass has completely dried out. The sight of carcasses lying along the road is in itself tormenting and lowering aesthetic

values in the region.

NEMA should engage the county government in having a robust solution in this challenge; the county can be advised to conduct a clean-up exercise immediately such disasters occur including identifying and designating special areas where animal carcasses can be disposed other than along the roads. A post-disposal assessment can also be conducted to monitor effectiveness of the actions and check on compliance.

Actions to ensure adaptation to climate change should also be enhanced to cushion suffering communities in the region as well as accessing market to their livestock during drought.

Right models should be used to predict the environmental impacts of carcass disposal at a particular location for the observed conditions (site and weather) during a carcass disposal event. These predictions would be helpful for real-time management decision-making, and would provide estimates of environmental impact.

When this is done, elevated levels of biochemical oxygen demand (BOD), ammonia-nitrogen (NH₄-N), total dissolved solids (TDS), and chloride could be reduced within or very near the trenches and along the roads.



Impact of Banning Plastic Bags on Kenyans

By Vivian Busolo

Nearly two million plastic bags are used every minute in the world, as Earth Day reports, that is a phenomenal amount of energy going to waste yet the average lifespan of a plastic bag is just 12 minutes as Biological Diversity reports. Plastic bags generally tear and puncture after the first use, they are easily transported by wind and are some of the most visible components of roadside and shoreline litter.

Since they are produced from oil and natural gas, they never fully biodegrade remaining in the environment's small or even microscopic particles essentially forever. A 2015 study in Environmental Science and Technology also found that marshland sediments that were covered by plastic bags contained lower levels of oxygen and organisms than sediments that did not have bags obstructing their light and oxygen intake.

In an attempt to free the environment from non-biodegradable waste, The National Environment Management Authority of Kenya banned plastic carrier bags in the 2017. Before 2017, about 100 million plastic bags were used in Kenyan supermarkets every year, with severe consequences to the environment.

Many Kenyans applauded the environmental watchdog (NEMA) for taking the bold step to save the country from the plastic bags menace although some had worries about the immediate effects upon their lives that would have resulted from the ban. Creativity took its way and Kenyans adapted to using non-woven carrier bags to do their shopping.

A research sanctioned by NEMA in 2018 on prevalence of plastic bags in rumens of slaughtered livestock in Nairobi's abattoirs found out that more than 50% of livestock had ingested plastic bags. The animals conditions such as depression, being weak and bloating due to stomach blockage affected milk and beef production. Some of the areas where NEMA conducted the study on livestock included: Dagoretti, Kiserian and Kenya Meat Commission. With the banning of plastic bags, there was a great increase in milk and beef production since the animals could no longer take in the plastic bags. Plastics such as bottles, food wrappers, cigarette filters and grocery bags that

took approximately 73% of beach litter have also been eliminated from beaches .

With the ban, Kenya has become one of the few countries to ban plastic bags globally acting as a benchmark to most countries. The public has also changed its attitude towards their view on plastic bags which represents an 80% compliance with the plastic ban. The public has looked for eco-friendly personal products and plastic-free home products .They have decided to choose items made out of sustainable materials like wood, bamboo, stainless-steel and silicone. Using plastic-free alternatives for items we mostly use has the most impact. This products include plastic-free shampoos, refillable body washes and plastic-free toothbrushes since they are items we often use and replace regularly.

Basing on the Kenyan context, there is no sign of non-renewable resources running out anytime in the immediate future. Plastic bags ban has helped the public reduce their dependence on plastic and wasteful use of non-renewable resources. As an alternative, reusable shopping bags made from recycled content prove to be an effective use of resources. Recycling of these bags helps the materials to be repurposed into useful items again and again helping shoppers and the public use less plastic and adjust to life without disposable bags hence preventing environmental pollution.

Despite some individuals losing jobs due to the banning of plastics, the Kenyan economy has been enhanced. Bans on plastic bags has caused an uptick in business for reusable bag manufacturers and has allowed tax money to be redirected to more important areas.

Marine life, a form of tourism in Kenya, has also improved helping in regulating the climate and maintaining biological control. Proper sewage systems have been implemented in every county preventing air and water pollution for the residents to live in a clean and conducive environment. Plastic banning therefore has brought a drastic change in Kenya as a nation.

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