

# Mtafiti Monthly

By: Dr. David Mirera, Joseline Kendi, Brian Isoe & Chebet Mercy, Edits: Jane Kiguta

## KMFRI and Northern Rangelands Trust launch mud crab cages to empower communities in Lamu

Aquaculture practice is emerging as a solution to food security and sustainable livelihoods in coastal Kenya. In Mtagawanda village, Pate Island, Lamu County, the community is now embracing aquaculture as a new source of hope and opportunity. This shift marks a turning point in addressing overfishing, improving household incomes, and building resilience against climate change. KMFRI team, in conjunction with the Northern Rangelands Trust team, launched a mud crab farm in the area to build capacity in mariculture practice and provide technical support towards adopting mud crab restorative aquaculture.

The 12-day activity allowed the community to benefit from a three-day in-class training session designed to improve farmers' skills through hands-on experience in profitable and sustainable mud crab farming. Dr. Mirera used this opportunity to educate communities through different modules of mud crab farming, including: the biology of the mud crab, site selection for farming, construction of culture systems, seed collection, cage stocking, monitoring, and value addition.

### Installed cages on site



*Installed cages to be used in fattening of mud crabs on site at Mtagawanda.*

Mud crab farming along the coast has gained momentum following community sensitization efforts beyond fishing. For many years, coastal communities have depended on fishing, creating significant pressure on marine resources and leading to a sharp decline in fish species.

The participants constructed a pen and deployed eight cages that will be instrumental in the culture and fattening of mud crabs, housing 1000 crabs for the pen and 160 for the cages. This mud crab fattening initiative will improve the livelihoods of the coastal communities through the creation of employment, provide an accessible and sustainable small-scale aquatic food system, which will, in turn, boost food security and nutrition among the communities and the country.

# Mtafiti Monthly

Dr. Mirera, while overseeing the construction, encouraged the team to closely follow the practicals and apply what they learned in class to real-world situations. He led a community-driven session, allowing them to select sites before recommending the most suitable one.



*Dr. Mirera demonstrates how to use a weighing scale correctly to measure a crab's weight.*

He said this will play a major role in replicating more pens and sites to boost crab farming without relying solely on donor funding. This will help develop a new generation of innovative communities that will enhance food security, especially by promoting and advocating for aquatic food systems consumption, with technical advice and support from professionals.

For sustainability, there was a need for the community to be trained on business operations to equip them with the necessary expertise to handle and manage their finances and day-to-day business operations. The team took them through the development of a business plan that will serve as a roadmap for managing the project.

The community was also taken through an informative session on what a business plan is and what it entails, and why there is a need to educate them on the same. Emmanuel Gafo, a scientist at NRT, led the session, which he used an engaging approach by invoking leading questions that the members responded to and thus developed a business plan together. This, he emphasized, will be key in identifying gaps in the services they will render and also keep tabs on their expenditure and profits.

“You have to have specific goals that you wish to achieve shortly and with clear, distinctive timelines, without having clear indicators on what you want to achieve in a specific period, then you won't make your anticipations in maximizing your profits come true,” he noted

Gafo asked the trainees to be objective and tailor their objectives to the size of their tasks, setting goals that are achievable within specific periods. Members retreated to groups to deliberate on diverse ideas before coming up with one plan after consultations within themselves. This, he said, will give the community the autonomy of making decisions without depending on a third party who would influence their decisions and own the project.

# Mtafiti Monthly



*Demonstration on how to handle and tie a mud crab.*

As the pilot officially kicks off, the community members remain optimistic about the project, looking forward to reap from their sweat. They hope to be the pioneers of a great path towards amplifying ecotourism in the north with their hopes to build a restaurant and alleviate their poverty levels in play.

*The project is co-funded by Northern Rangelands Trust (NRT) and [The Nature Conservancy](#), with technical guidance from [Kenya Marine and Fisheries Research Institute](#).*

By: David Mirera, David Mwoma, Brian Isoe & Chebet Mercy  
Edits: Jane Kiguta

## Waves of change: Mombasa Ocean Festival 2025 champions the Blue Economy

A gentle breeze drifted off the Indian Ocean as diverse stakeholders, including scholars, policymakers, practitioners, private sector representatives, and students, gathered at the Kenya Marine and Fisheries Research Institute (KMFRI) headquarters in Mombasa for the highly anticipated Blue Economy Policy Summit.

The summit supports the partnership goals of the Africa Ocean Decade Roadmap, emphasizing capacity building, equitable and inclusive cooperation, and technological progress. It highlights the participation of young and emerging African professionals, providing opportunities for student co-supervision, scientific exchange programs, and access to advanced research laboratories.

Held in the aptly named Dolphin Hall, the summit was a vivid reminder that the ocean is far more than a scenic backdrop to Mombasa's coastline; it is a lifeline, a vital source of livelihood, and a central player in the global fight against climate change.

# Mtafiti Monthly



*Ag Director General KMFRI, Dr. James Mwaluma, delivering his opening speech at the Blue Economy Policy Summit.*

Acting director general KMFRI, Dr. James Mwaluma, delivered a warm welcome in his opening speech, recognizing the youthful energy in the room and expressing his optimism for the future. "I am happy to see so many young people here. The future is secure," he said. Dr. Mwaluma officially flagged off the event, championing ocean and sea health preservation. He encouraged all participants to engage, interact, learn from one another, and develop meaningful interventions and recommendations during the summit. "This is an opportunity we must fully embrace," he added.

Director of the French Institute for Research in Africa (IFRA)-Nairobi, Dr. Sylvain Racaud, also addressed the gathering, emphasizing IFRA's commitment to advancing the social and human sciences. "We are

extremely happy to be able to expose some of the results of the projects to this diversified panel," he remarked.



*Dr. Sylvain from IFRA is addressing the participants during the conference.*

"The topic is very interesting because it could highlight some tensions and contradictions between the so-called development paradigm and the conservation paradigm as we try to understand the basis of this model. We see the blue economy as innovation—a technical process that we have to define by what we do daily."

Director of Alliance Française de Mombasa, Lucas Malcor, acknowledged event partners and lead collaborators in organizing the event. He highlighted the importance of using art as a form of communication in the blue economy sector and emphasized the potential for collaboration between scientists and artists in marine conservation.

# Mtafiti Monthly

## The Blue Economy: More Than Just Water

Blue Economy may sound like a catchy phrase, but it carries immense weight. Born out of the 2012 Rio Earth Summit, it's a development model that pushes for economic growth while fiercely protecting marine ecosystems.

It's about responsibly harnessing ocean resources, from fishing and shipping to eco-tourism and technology, while ensuring marine life thrives and coastal communities that depend on the ocean flourish. And with the United Nations declaring 2021–2030 the Decade of Ocean Science for Sustainable Development, the timing of the Mombasa summit couldn't be more perfect.

## A Local Lens on Global Challenges

This year's summit, co-organized by the Alliance Française de Mombasa and the French Institute for Research in Africa (IFRA) – Nairobi, placed a strong emphasis on local expertise and innovation. Through IFRA's support, four outstanding Kenyan scholars were spotlighted for their research exploring the delicate balance between coastal development and marine conservation.

As part of their ongoing commitment to the global climate agenda and sustainable development goals, AFM and IFRA invited KMFRI to co-host this policy summit, an open platform to examine the socio-economic, cultural, and ecological stakes of coastline development from multiple perspectives.

Different presentations by various actors sparked lively discussions about how to bridge science and policy, ensuring that community voices aren't drowned out in the rush for economic development.

## Beyond the Summit

While the summit was just a one-day affair, its impact is poised to ripple far beyond the Dolphin Hall walls. Through networking sessions, knowledge exchange, and shared passion, the Blue Economy Policy Summit succeeded in its mission: to demystify the Blue Economy and anchor its importance in the minds of everyday Kenyans.

The future of Kenya's oceans depends on collaboration between old and young, East and West, local communities and global leaders. And as the countdown begins to the UN Ocean Conference in Nice later this year, Mombasa has already set the pace.

From the shores of Kilifi to the coral reefs of Diani, the waves of change are coming. And thanks to the efforts of events like the Mombasa Ocean Festival 2025, they might just carry us to a cleaner, fairer, and bluer tomorrow.

## Expert Voices Unite in Panel on Marine Ecosystem Conservation

One of the highlights of the morning session was a compelling panel discussion on "Conservation of Marine Ecosystems", chaired by the Principal Research Scientist at KMFRI, Dr. David Mirera. The session brought together a distinguished group of experts whose work reflects the intricate and interconnected nature of coastal and marine sustainability.

# Mtafiti Monthly



*Dr Mirera giving his remarks during the blue economy policy summit at Dolphin Hall in KMFRI.*

Among the panelists was the Blue Carbon Conservation and Management Specialist at KMFRI, Dr. Kipkorir Arap Sigi Langat, who emphasized the role of mangroves in climate mitigation. Principal Research Scientist at the Wildlife Research and Training Institute, Dr. Mohammed Omar, highlighted the importance of safeguarding marine species through science-backed conservation strategies.

## **Building sustainable Coastal infrastructure**

After lunch, attention shifted to the theme of infrastructure and its role in shaping the future of the blue economy. The afternoon panel discussion, "Infrastructure Development," was chaired by Dr. Francesca Di Matteo, a researcher at the French Institute for Research in Africa (IFRA).

The panel featured notable contributors, including, Regional Coordinator at the State Department for Blue Economy and Fisheries, Imam Rashid, who outlined the government's coastal infrastructure strategy. Senior Marine Officer at the Kenya Ports Authority, Florence Bet, emphasized eco-conscious port

development and the balance between economic growth and environmental protection.

## **Connections that count**

Following the final panel, participants mingled in an open networking session, an opportunity to exchange ideas, build partnerships, and reflect on the day's discussions. From scholars to policymakers, and students to seasoned professionals, the room buzzed with conversation and collaboration.

The Blue Economy Policy Summit closed not just with answers, but with new questions, deeper connections, and a shared sense of responsibility. As Kenya continues to explore the vast potential of its blue economy, gatherings like this will remain crucial in guiding the journey toward a more sustainable and inclusive future.

To meet her national mandate of providing scientific data to inform and guide the exploitation of the Blue Economy, KMFRI banks on collaborations and partnerships to seal the gap in financial and technical resources required.



*Participants pose for a group photo after the deliberations.*

# Mtafiti Monthly

## A presidential priority

Kenya's government has prioritized the Blue Economy, with President William Ruto calling it a crucial area for socioeconomic growth and environmental sustainability. The summit highlighted how the Blue Economy relates to several United Nations Sustainable Development Goals—not just Goal 14 (Life Below Water), but also Goal 1 (No Poverty), Goal 3 (Good Health and Well-Being), and Goal 13 (Climate Action). It's a cross-cutting vision that requires everyone to work together.

By: Dr. Edward Kimani, Brian Isoe, Eugene Kasuku  
Edits: Phionalorna Nzikwa

## Closing the net on data gaps through electronic monitoring in Kenya's fisheries sector

Kenya Marine and Fisheries Research Institute, together with key stakeholders, converged at the Royal Court Hotel in Mombasa County from the 16<sup>th</sup> to 18<sup>th</sup> of July, 2025, to share key findings, insights, and lessons learned from the ongoing pilot integration of Electronic Monitoring (EM) systems on Kenya-flagged fishing vessels. The theme of the event, "Improving Kenya's marine fisheries transparency through electronic monitoring set the stage for three days of meaningful dialogue, collaborative data

sharing, and strategic planning for a brighter, sustainable future for our fisheries. This innovative pilot project aspires to enhance transparency and sustainability in Kenya's marine fisheries by harnessing technology to collect and analyze crucial fisheries data, paving the way for responsible stewardship of our ocean resources.



*Dr. Kimani addressing fisheries actors during the session at Royal Court hotel.*

One of the recurring topics at the workshop was the critical role of electronic monitoring in addressing long-standing data gaps in Kenya's fisheries sector. Speaking at the event, Dr. Kimani of the Kenya Marine and Fisheries Research Institute emphasized the limitations of traditional human observer programs.

"Human observer data covers only about 5% of fishing trips compared to EM, which can achieve nearly 80% coverage. Species identification and verification are also far more accurate when video footage can be reviewed repeatedly," Dr. Kimani.

This is where EM proves its strength, going beyond the limitations of human observers. EM is a tried-and-tested tool that increases openness and compliance in

# Mtafiti Monthly

large-scale fisheries worldwide, using cameras, GPS, computers, and sensors to remotely record and transmit fishing data.

The findings being discussed were from four vessels that were equipped with cameras for the entire piloting phase to achieve several objectives, including: accessing and generating reliable, accurate data for compliance, science, and training purposes. They also aimed to demonstrate and validate the usefulness and effectiveness of electronic monitoring in overseeing our fisheries activities.

The pilot project demonstrated that EM is a game-changer for marine management, leveraging technology to observe, track, and regulate activities in Kenya's waters. Data collected from selected fishing vessels as a part of this science-based collaborative initiative has highlighted the ability of EM systems to provide real-time, verifiable information on marine species, fishing practices, and ecosystem health.

## ***Technologies employed under EM***

Participants present at the workshop were introduced to the suite of technologies employed under EM, from satellite tracing to monitor vessel movements and fishing zones, to acoustic and camera monitoring to observe marine life and record fishing activity, and sensor technologies to measure environmental factors like water quality. The video data collection, a key component of EM, enables detailed records of species, size, weight, catch handling, and bycatch, creating a rich dataset that was previously hardly possible.



*George from TNC sharing insights with participants.*

Electronic monitoring systems serve two main purposes: they validate logbook entries by identifying discrepancies and provide oversight of catch handling practices. These systems highlight both effective and ineffective practices, allowing for opportunities for improvement. Through video reviews, responsible agencies and stakeholders can verify what is retained, what is released, and the condition of any bycatch at the time of release.

The system is also proving instrumental in understanding exactly where fishing activity is taking place, making management decisions more targeted and effective. Stakeholders also explored the potential of integrating Artificial Intelligence (AI) into EM systems to enhance data analysis, species identification, and even predict trends for more effective fisheries management.

# Mtafiti Monthly

AI generation, they noted, could lead to better, clearer data and more actionable insights; a crucial step toward achieving Kenya's sustainability and conservation goals. The event underscored the importance of multi-agency collaboration to seal potential loopholes in implementing and using EM.

## ***Kenya, the second country in Africa to implement the EM***

With the official rollout and implementation of this program, Kenya will become the second country in Africa to highlight the essential role of ecosystem management in promoting sustainable fisheries.

During his presentation, Dr. Kimani emphasized the importance of embracing change, stating that it is not just an option but a necessity for advancing the development of the fisheries sector. He also noted that improved transparency will be vital for converting raw data into actionable plans for effective fisheries management.

The system does more than just monitor fish and fishing activities; it also collects essential oceanographic data, including temperature, salinity, and other environmental parameters. This information is crucial for understanding ecosystem dynamics and supporting effective fisheries management.

By offering comprehensive, high-quality datasets, the system promises to transform how Kenya manages its marine resources, ensuring that fisheries remain productive and sustainable.



*Different participants pose for a photo.*

## ***Integration of EM systems: A significant step toward marine fisheries transparency***

With the data shared, discussions held, lessons learned, and momentum built over the successful three-day workshop, Kenya is now better poised to lead the way in marine fisheries transparency and sustainability.

The integration of electronic monitoring systems marks a significant step forward; one that combines science, technology, policy, and collective will to protect our marine ecosystem.

Through the leadership of KMFRI and its partners, the integration of electronic monitoring systems promises to not only protect Kenya's marine biodiversity, but also promote the sustainable use of our aquatic resources to improve the livelihoods and socio-economic development of communities dependent on these resources.

# Mtafiti Monthly

By: Faith Mboka Edits: Jane Kiguta

## Charting Kenya's blue future through Marine Spatial Planning

Kenya's coastal and inland waters are rich with life and activity, supporting fisheries, aquaculture, tourism, shipping, and many communities who depend on healthy aquatic ecosystems for their livelihoods. As our population grows and economic activity expands, the demands on our marine and freshwater spaces continue to increase. Without careful planning, this can lead to conflicts over resource use, habitat loss, and livelihoods put at risk.

Marine Spatial Planning (MSP) provides a practical way forward. MSP is a science-based, participatory process that brings together all stakeholders from fishing communities and fish farmers to tourism operators, shipping companies, conservation groups, researchers, and government agencies to decide how aquatic spaces are used and managed fairly.

Through MSP, Kenya aims to create clear zones where different activities can thrive side by side while protecting vulnerable ecosystems. This means fishing areas can remain productive, new industries like aquaculture can grow sustainably, tourism and transport routes can operate safely, and important habitats like coral reefs, mangroves, wetlands, and fish breeding grounds stay healthy for generations to come. This effort follows an ecosystem-based approach, recognizing that the environment, the economy, and our communities, both along the coast and inland, are deeply connected. Strong laws and policies support the plan, drawing authority from Kenya's Constitution, the Physical and Land Use



Planning Act, and international commitments to sustainable ocean and freshwater governance.

A significant milestone was reached in March 2024 when the Cabinet approved the National Marine Spatial Plan, marking real progress for Kenya's Blue Economy vision. Today, a dedicated MSP Secretariat, supported by national ministries, KMFRI, local communities, partners, and civil society, continues to guide the plan rollout. Ongoing public awareness and engagement are essential to ensure that people understand the benefits of good planning and feel part of the process.

Marine Spatial Planning is more than lines on a map. It is Kenya's commitment to manage its ocean, lake, and river spaces wisely, securing livelihoods, strengthening food security, conserving biodiversity, and opening up opportunities for sustainable growth. By investing in clear, inclusive planning now, Kenya is protecting the promise of its aquatic resources for the communities who rely on them today and tomorrow.

# Mtafiti Monthly

By: Eugene Kasuku Edits: Jane Kiguta

## Pollutants are threatening human health and marine life

Every day, our environment is exposed to new chemical pollutants, Emerging Pollutants (Eps) which are substances like pharmaceuticals, cosmetics, pesticides, detergents, and micro-plastics that enter the aquatic environments through domestic waste, hospital runoff, industrial discharge and agricultural practices. While they exist in trace amounts, their long-term effects are anything but small.

Emerging pollutants have a unique and dangerous behavior in aquatic ecosystems. They do not break down easily. Instead, they bio-accumulate in the tissues of aquatic organisms, bio-concentrate in their environments, and biomagnify up the food chain from plankton to fish, and ultimately to humans. The danger lies (cancer-causing) in their property's toxic and carcinogenic mutagenic (DNA-altering) properties. Recent research shows links between EP exposure and increased cancer rates, damage to the nervous system, delays in infant development, and endocrine

disruption in both humans and wildlife.



*Plastics deposited in the ocean pose a threat to the ecosystem.*

Our coastal communities depend heavily on fisheries for both nutrition and livelihood. Unfortunately, fish exposed to Eps often show reduced productive ability, stunted growth, deformities, and compromised immune systems. For humans consuming seafood, the risk of ingesting high concentrations of these pollutants is real and growing. The sustainability of marine ecosystems and the health of those who depend on them are at stake.

Kenya Marine and Fisheries Research Institute has been at the forefront of studying aquatic pollution. Through ongoing research on water quality, sediment analysis, and fish tissue sampling in Kenya's marine and freshwater bodies, KMFRI is helping to identify key

# Mtafiti Monthly

EP sources, map pollution hotspots, and assess the ecological and health risks.

This research provides critical data to guide policymakers and inform best practices in waste management, fisheries regulation, and marine conservation efforts. KMFRI employs advanced analytical techniques, including chromatography and mass spectrometry, to detect and quantify emerging pollutants in aquatic environments.



*Different plastic bottles and bags are contaminating our marine ecosystem.*

The issue of emerging pollutants is complex and multifaceted, requiring a concerted effort from governments, industries, and individuals.

By understanding the problem, supporting research and policy initiatives, and making conscious choices in our daily lives, we can work towards reducing the impact of emerging pollutants on human health and marine life. Let's take action today to protect our planet's precious resources for future generations.

To mitigate the threat of EPs, we must improve wastewater treatment infrastructure to filter out pharmaceuticals and industrial pollutants before they reach water bodies.

We also need to strengthen regulations on the disposal of hospital, agricultural, and domestic waste, promote eco-friendly alternatives to personal care and household products, raise public awareness on how everyday choices contribute to pollution, and support research institutions like KMFRI in their monitoring and policy development efforts.

Whether you're a policymaker, consumer, or community leader, you have a role to play. You can sign petitions supporting stricter regulations on emerging pollutants, reduce your use of single-use plastics and chemicals, support organizations working on environmental conservation, and stay informed about the latest research and developments on emerging pollutants.

Did you know that even trace amounts of caffeine, painkillers, and birth control pills have been detected in fish across the world? These drugs enter water systems through human waste and are not fully removed by conventional treatment plants. Some fish have shown altered behavior and reproductive cycles as a result.

By: Eugene Kasuku Edits: Jane Kiguta

## KMFRI to establish research and training centre in Kakamega as MCAs rally behind aquaculture development

The Kenya Marine and Fisheries Research Institute (KMFRI) is set to expand its footprint into Kakamega County following strong support from the County Assembly, which has approved plans to allocate 25 acres of land in Mumias West Sub-County for the establishment of a Research and Training Centre.

Kakamega County has for a while faced a deficiency in the production of quality fish seeds to stock the many ponds already constructed in the region. This shortage has discouraged farmers, leading to a decline in the number of active aquaculture practitioners. The establishment of KMFRI in the county is expected to directly address this gap by providing reliable seed production, research-backed farming techniques, and training that will revive aquaculture and make it a sustainable economic activity once again.



*Members being briefed on the progress of the growing fish seeds.*

The new centre will be strategically located at the confluence of Rivers Lusumu and Nzoia in Matawa community area. Once completed, it will serve as a hub for aquaculture research, training, and innovation, offering opportunities for knowledge transfer, employment creation, and enhanced fish production to support local livelihoods.

During a recent benchmarking mission to Kirinyaga and Tharaka Nithi counties, the County Assembly's Agriculture, Cooperative, Livestock, Veterinary Services and Fisheries Committee engaged with KMFRI experts on best practices in aquaculture. The team, led by Committee Chairperson Hon. James Etabale, emphasized the transformative potential of KMFRI's presence in Kakamega.

*"We want this institute in our home county like yesterday. It will revive fish pond farming, promote aquaculture research, create employment, enhance food security, and even boost tourism," Hon. Etabale.*

# Mtafiti Monthly

KMFRI Director of Aquaculture, Dr. Jonathan Munguti, assured the delegation that the Institute is committed to setting up the centre once legal and administrative processes are finalized. Other KMFRI officials who engaged with the MCAs included Assistant Director of Aquaculture, Dr. Paul Orina, who leads fish breeding research, and Deputy Director for Finance and Administration, CPA Abraham Kagwima.



*KMFRI DCS Dr. Ibrahim Kagwima addressing members at the meeting.*

Dr. Orina highlighted that Kenya faces an unmet demand of about 350,000 metric tonnes of fish annually. He noted that Kakamega's favorable climate, water resources, and available land make it an ideal location for aquaculture development, with the potential to significantly contribute to bridging the national fish production gap.

Members of the Assembly expressed optimism about the project, with Hon. Victoria Zillah predicting that Kakamega KMFRI could be operational within a year. The delegation, which included the Leader of Majority, Hon. Phillip Maina, and the Clerk, Dr. Donald Manyala, also visited local aquaculture farms, witnessing

firsthand the opportunities aquaculture presents for rural communities.



*Members touring a functional pond in Kakamega.*

With KMFRI's technical expertise and the County Assembly's full support, the establishment of the Kakamega Research and Training Centre is expected to be a game-changer for the region, fostering innovation, strengthening food security, and driving socio-economic growth.

## Upcoming Event

**One Ocean One Future:**  
Connecting People, Policy, and Science for a Thriving Western Indian Ocean

**WIOMSA**  
WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION  
Coasts, Ocean and People  
Read More

**13TH SCIENTIFIC SYMPOSIUM**

Mombasa Kenya  
28th Sept - 3rd Oct 2025