KENYA

MANGROVE TRACK RECORD

Wetlands INTERNATIONAL

WETLANDS INTERNATIONAL WORKS TO SAFEGUARD AND RESTORE ONE MILLION HECTARES OF MANGROVES ACROSS 10 AFRICAN COUNTRIES, PRESERVING BIODIVERSITY WHILE BENEFITING APPROXIMATELY TWO MILLION PEOPLE.

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Aerial shot of fishermen from Matondoni Village in Lamu.

Intact mangrove forest bordering Kitangani restoration site.

BACKGROUND

In Kenya, Wetlands International started its first large scale coastal programme in 2021, focusing its activities on two locations which contain 66% of the country's total mangrove area, Tana Delta and Lamu. Both are rich in biodiversity and natural resources, and their mangrove forests support thousands of local livelihoods – but a range of pressures from human activity as well as natural changes caused by the 1997-98 El Nino phenomenon threaten the health of these vital ecosystems.

We're working to halt and reverse degradation and unsustainable exploitation, collaborating closely with local and national stakeholders on a wide range of mangrove conservation and restoration activities, building social and ecological resilience in our target areas. As we create partnerships, raise awareness and develop effective strategic approaches to the challenges we face, we're beginning to scale up our impact across Kenya and the wider region.

This report summarises our activities so far.

In a nutshell, our achievements in Kenya include:

- **Enhanced the conservation status of over 38,000 hectares of mangroves** in Lamu and Tana Delta through participatory management planning, patrolling, training, awareness raising, and supporting alternative livelihoods.
- **Restored 116 hectares of mangroves** directly and indirectly using the Community-Based Ecological Mangrove Restoration (CBEMR) approach.
- **Supported more than 7,300 people** by creating sustainable alternative livelihoods, reducing dependence on mangrove resources for firewood, fishing, and construction.
- **Installed improved cook stoves in 104 households and a school**, benefiting 3,000 people and reducing mangrove wood consumption, with plans for upscaling through Lamu County Government.
- **Initiated a nature-based ecotourism project** on Pate Island, which includes a mangrove boardwalk, bird-watching platform, and visitor centre, boosting local livelihoods and promoting conservation.
- **Built strong relationships with key national and local stakeholders**, such as the Kenya Forest Service and County Government of Lamu, to ensure coordinated mangrove management.
- **Contributed to national and regional policies and sustainable mangrove management**, by sharing knowledge, mangrove monitoring data (Global Mangrove Watch), and best practices for mangrove restoration and conservation.

'BY RESTORING TODAY, WE ENSURE A SUSTAINABLE FUTURE FOR GENERATIONS TO COME.'

Mohammed Kassim
Chairman, Pate Resource and Tourism Initiative (PRATI)

TARGET AREA IN BRIEF

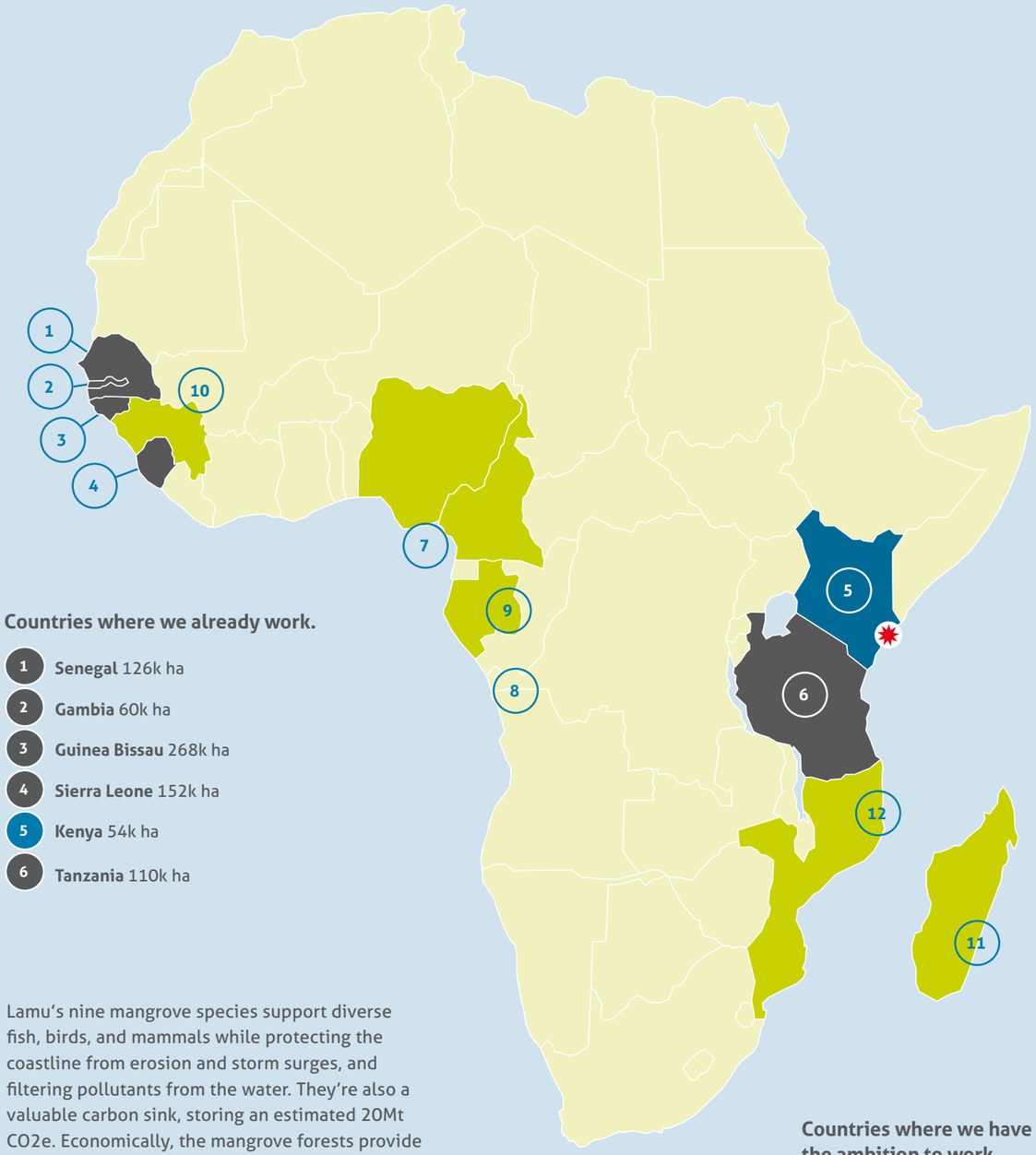
Region:
West Indian Ocean

Mangrove area:
40,610 ha
(Lamu and Tana)

Population:
143,920

Governance:
24,924 ha
Some 46% of the mangroves in Kenya are within protected areas. This includes Lamu, a UNESCO World Heritage site. The Tana Delta is also highly significant as an Important Bird Area (IBA) and a Ramsar Site, with at least 20 waterbird species exceeding the Ramsar 1% global population criterion.

Total restorable area in Kenya:
1,609.70 ha
~1,060 ha in Lamu and Tana delta



Countries where we already work.

1. **Senegal** 126k ha
2. **Gambia** 60k ha
3. **Guinea Bissau** 268k ha
4. **Sierra Leone** 152k ha
5. **Kenya** 54k ha
6. **Tanzania** 110k ha

Countries where we have the ambition to work.

7. **Nigeria** 844k ha
8. **Gabon** 174k ha
9. **Cameroon** 197k ha
10. **Guinea** 221k ha
11. **Madagascar** 277k ha
12. **Mozambique** 302k ha

Context

The Lamu land and seascape on Kenya's northeast coast is celebrated for its rich biodiversity. Its marine life includes whales, dolphins, turtles, dugongs, and over 300 fish species; while endangered animals such as the Tana River mangabey, hirola antelope, and Lamu slender-snouted crocodile inhabit the land. Elephants also frequent the Tana Delta's mangrove forests, and migratory species visit the islands in the winter.

Lamu Island, the archipelago's commercial hub, thrives on tourism and fishing. It's Swahili culture is reflected in narrow streets, coral stone buildings and dhow boats, blending Arab, Indian and African influences.

Lamu's nine mangrove species support diverse fish, birds, and mammals while protecting the coastline from erosion and storm surges, and filtering pollutants from the water. They're also a valuable carbon sink, storing an estimated 20Mt CO_2e. Economically, the mangrove forests provide timber, firewood, charcoal and medicinal plant and support over 20,000 fishers. They also boost tourism through activities like birdwatching and boat tours that bring much-needed revenues to local communities. Over 140,000 people rely on the mangroves for fisheries, fuel, and climate protection. The total amount of 'blue' carbon stored in Kenya's mangroves is ~77.3 Mt CO_2e, with Lamu contributing 20 Mt C at an average density of 560 t C/ha.

THREATS TO KENYA'S MANGROVES

- **Deforestation** – although in Lamu it is officially allowed to harvest mangrove poles according to strict criteria, mangrove poles are commercially and illegally harvested beyond those limits for uses including building, construction and fuelwood
- Land conversion for traditional and industrial **salt production**, driving forest clearance and pollution from wastewater brine
- **Infrastructure development**, including the construction of the largest port in East Africa in Lamu – this involved clearance of large areas, dredging of waterways (potentially causing erosion and sedimentation disturbances), and increased shipping traffic and pollution
- **Climate change** factors such as heavy rains and siltation, and severe droughts, altering conditions for natural regeneration

An egret perching on the vibrant mangroves of Lamu.

OUR IMPACTS IN LAMU AND TANA DELTA, KENYA

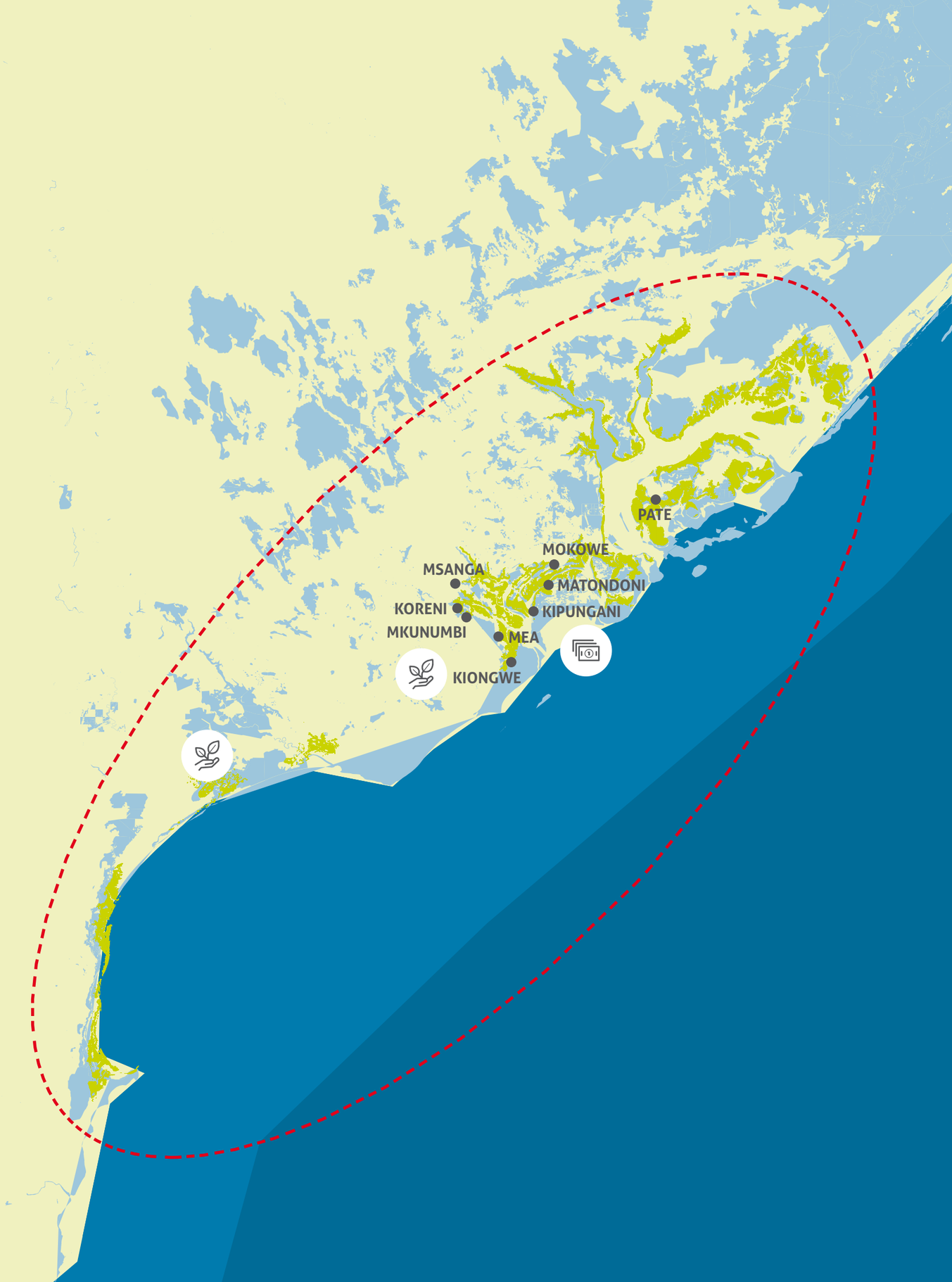
Wetlands International has a clear vision: Mangroves and their biodiversity are healthy, improving the livelihoods of millions of people and protecting them against the dangers of climate change.

Our interventions will achieve the following impacts:

- **Educated, resilient communities** with alternative livelihoods that depend less on unsustainable use of mangrove resources
- **Improved food security** through increased fish and crustacean stocks
- **Increased biodiversity** with returning nesting and migratory birds
- **Increased protection** against extreme weather, flooding and increasing salinity
- Maximised potential for **carbon sequestration**
- **Informed national and regional policies and regulations** in support of mangrove management

MILESTONES

		Target	Archieved
- - -	**Mangroves with improved conservation status (ha)**	**40,7000**	**38,257**
	Magroves restored (ha)	**2,200**	**116**
	People benefiting (indirect & direct) Of wich: People livelihoods changed (direct)	**61,000** 4,000	**61,759** **7,388**



Wetlands International is supporting community groups to adopt improved beekeeping practices.

OUR STRATEGY AND ACHIEVEMENTS

There are four main components to Wetlands International's approach:

1. We develop and upscale mangrove **conservation and restoration** efforts.

2. We develop and upscale sustainable measures that improve **community livelihoods**, working closely with local people.

3. We build an **enabling environment** within **which communities and other stakeholders can effectively collaborate**. We also build and disseminate a knowledge base.

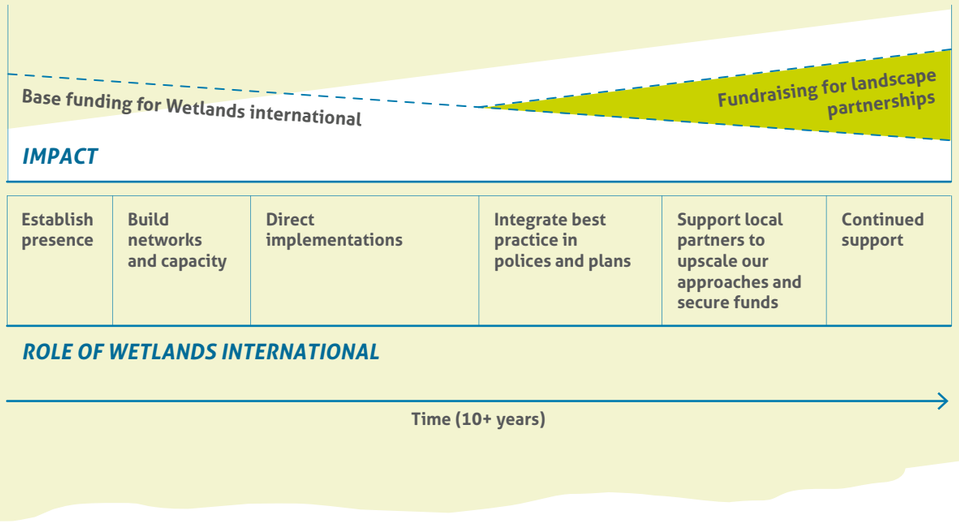
4. We work at a **national and landscape scale** to ensure **systemic change** for sustainable mangrove management.

This approach is the fruit of decades of experience in implementing projects on the ground all over the world and informs everything we do. Conservation and restoration are linked strongly with livelihoods, through close collaboration with community groups, and both areas are strengthened by activities conducted as part of the enabling environment component. Activities in these three components ultimately contribute to processes at national and landscape level, informing policy dialogue, sharing and promoting best practices, and underpinning coastal zone planning.

Our activities under each component in Kenya are described in more detail below.

Upscaling our impact

The success of Wetlands International's approach depends on effective upscaling. While our direct activities yield results locally, we focus on enabling others to replicate these efforts on a larger scale. Through awareness-raising, training, technical support, and fundraising, we empower local communities and NGOs to adopt and share our approaches, amplifying our impact. Over time, our role shifts from direct implementation to supporting others in taking the lead, ensuring sustainable and locally-owned solutions at scale.



Kitangani Demo site after correcting hydrology in September 2022.

1. CONSERVATION AND RESTORATION

Throughout the Lamu and Tana Delta regions, communities are conserving and restoring mangroves, while benefiting from training and livelihood support.

‘THE CBEMR TRAINING IS HOLISTIC AND PRACTICAL’

‘The CBEMR training is holistic and practical as it has enabled us to identify the challenges and opportunities in mangrove ecosystem restoration. For example, what we have inadvertently done wrong in the past, and what needs to be done going forward at the community, county and national levels.’

Julius Nandwa,
KFS’s Lamu Forester

Restoration of mangroves in Kenya

We use the Community Based Ecological Mangrove Restoration (CBEMR) approach in Lamu, focusing mainly on natural regeneration and enhancing local site conditions. We do this by improving area hydrology, sediment and nutrient conditions and by creating sustainable livelihoods in communities, who in turn help in site identification, restoration and monitoring efforts. CBEMR has significantly higher success rates than conventional planting and is cost-effective and efficient in the long-term. It also enhances biodiversity, and forest and coastline resilience. We are therefore globally advocating for its adoption as best practice and for policies in Kenya and other countries to support scaling up CBEMR.

Some areas in Lamu face particularly significant challenges to recovery. For example, the El Niño event of 1997-1998 severely impacted the reproductive capabilities of mature trees in the Mkunumbi area (our Kenya Forest Service-allocated restoration site), disrupting seed supply and regeneration. In addition, limestone mining has altered the soil substrate, making it difficult for propagules to survive. In areas like these, such as on Pate Island, we take a more hands-on approach and introduce seedlings to help support recovery efforts.

Kenya has relatively high mangrove restoration potential, with at least 1,609 ha available for restoration. The country has committed to restore 5.1 million ha of degraded forests as part of the Africa Forest Landscape Restoration initiative (AFR100) that aims to recover 100 million ha of forests by 2030.

In collaboration with the Kenya Forest Service (KFS), the County Government of Lamu, the community and other partners, we've developed and launched a **Participatory Forest Management Plan** and helped set up a community forest association Mkunumbi. Such plans empower local communities to create and implement their own sustainable forest management programmes, combatting issues such as illegal harvesting. Community management has so far improved the conservation status of 21,295 hectares of mangroves.

Kenya's mangrove forests supply an estimated 70% of the wood used by local communities. With the aim of reducing demand for mangrove wood for fuel and construction materials, we've launched a **woodlot initiative** for communities in mangrove areas where they can obtain sustainably sourced timber to meet their needs instead of using forest resources.

Using data from the Global Mangrove Watch platform, we've been working with the KFS to identify 93.2 hectares of **potential restoration sites** in Lamu. We've implemented a number of small-scale restoration measures to demonstrate our capability and credibility, providing a basis for upscaling with local partners.

In March 2022, Mangrove Action Project (MAP) joined hands with Wetlands International to train 21 representatives – half of them women – from community organisations, government and county officials, research institutions and civil society drawn from Lamu, Tana River and Mombasa counties. Interactions during the training were interesting, and sometimes discussions evolved into intense and heated debates.

CBEMR training in Lamu.

Following successful CBEMR training in Lamu, we established a learning and demonstration site in partnership with the KFS in the Kitangani area, to address the underlying hydrological challenges to natural mangrove regeneration and restore environmental conditions such as soil, oxygen and nutrient quality. Monitoring after six months showed clear improvement, with free-flowing water and visible signs of regrowth showing how successful correctly applied EMR approaches can be. This impactful restoration effort holds great promise for the revival of the wider Kitangani mangrove ecosystem.

Our CBEMR champions have worked with WWF and the Kenya Forestry Research Institute to establish a **mangrove nursery** in Matondoni with a capacity of 20,000 seedlings. These were used from January to June 2023 to support the rehabilitation of 33.22 hectares of degraded mangroves around Lamu, through direct and indirect interventions. We've also established nurseries in seven other villages in Lamu, and have worked with another CFA, Lamu Mangrove Community Forest Association to increase their knowledge of the environmental parameters needed to raise mangroves in nurseries. Assisted restoration is required in these areas, which were particularly affected by El Nino and limestone mining.

In partnership with local communities - including the Pate Resources and Tourism Initiative (PRATI), Mkunumbi, Lamu, and the Pandawe Community Forest Associations - and in collaboration with KFS, KEFRI, and the County Government of Lamu, we've developed a mangrove calendar seasonality guide. This guide aims to enhance knowledge and awareness of Lamu's mangroves, supporting ongoing restoration efforts across the archipelago. Through this initiative, we are committed to fostering a sustainable future for these essential coastal habitats.

Trainees during CBEMR field excursion in Lamu.

'IT'S THE BEST TRAINING I HAVE PARTICIPATED IN.'

' We have been trying to restore mangroves in our area and I have attended several training workshops on restoration. But it's at this CBEMR training that I heard for the first time that too much salt is bad for mangroves. And I know none of my colleagues is aware of that fact! I wish this CBEMR training had been conducted years ago. Had I known how to identify the ecological and biophysical conditions first, I would never have planted mangroves in drainages and waterways as I have done. It's the best training I have participated in and I am grateful to Wetlands International and MAP for this opportunity. I will ensure that I put into practice what I have learnt and share the knowledge with my colleagues '

Mwanahamisi Jillo,
manager with Lower Tana Delta Conservation Trust

Making of an improved cook stove.

2. COMMUNITY LIVELIHOODS

We're supporting communities to create alternative sustainable livelihoods that can be upscaled on a regional level, relieving the pressure on mangrove resources locally and then across far wider areas.

'NO ONE WANTS THE TRADITIONAL COOK STOVE. '

'I have always used the traditional cook stove and it consumed a lot of wood. Now, I see the benefits of using the improved cook stove. The food cooks well. I can cook much faster. I now use less fuelwood with this new stove and it doesn't produce any smoke. No one wants the traditional cook stove. Everyone loves the new stoves. Everyone wants to cook from them.'

Sofia Shee,
Matondoni Community member

Mohammed Hussein Kassim of PRATI holding a molted crab and its shed shell at their crab fattening farm in Pate.

Stakeholder analysis and capacity assessments we conducted in the region in 2022 revealed the potential dual role ecotourism could play in boosting community livelihoods and conserving mangrove resources. Working with the KFS, the National Environment Authority and the Pate Resources and Tourism Initiative (PRATI), we assessed the suitability of Lamu's Pate Island for ecotourism and learning – and we've already made significant progress in establishing an ecotourism venture as a nature-based enterprise, having initiated the design of a sustainable site on the island. The site will feature a mangrove boardwalk, a bird-watching platform and a visitor centre. Ultimately, an immersive **ecotourism** experience will highlight the intrinsic value of mangrove ecosystems while supporting local communities and conservation efforts.

A key focus of our work in Lamu has been to reduce the dependence of local communities on mangrove forests for fuelwood, which was historically used for cooking on open fires – a practice that's both inefficient and unhealthy. The most effective way of doing this is to provide efficient cook stoves for the villagers to use instead. Following a scoping study to identify the most suitable and durable model, we installed stoves in 104 households and one school, benefiting more than 3,000 people in Lamu including 800 pupils at Pate Primary School.

One year after installation, all the stoves remain in active use and are in good condition, feedback from beneficiaries is good, and less wood is being burned. Inspired by our demonstration of the potential of stoves to drive energy efficiency and reduce wood consumption, the County Government of Lamu has made **energy-efficient cook stoves** a priority programme for direct support – a very positive example of upscaling in action.

In Lamu, we are piloting **vegetable gardening** as an additional livelihood source for women in villages, providing them with tools and training to cultivate small-scale gardens for household use and income generation. Alongside this, we are supporting community groups to adopt **improved beekeeping practices**, helping them access the value chain for honey and other bee products – creating sustainable economic opportunities while promoting environmental stewardship. We are also piloting **crab fattening** with local communities, a promising initiative that is already showing positive results in boosting incomes.

'FISH AND MANGROVES ARE INSEPARABLE – MANGROVES FEED THEM, SHELTER THEM, AND SUSTAIN FISHING COMMUNITIES LIKE MATONDONI.'

Ali Ahmed, Fisherman, Lamu

Mangrove restoration done in the Bujira site by the Kipini Community Forest Association (CFA).

3. ENABLING ENVIRONMENT

We're bringing mangrove stakeholders together into constructive networks and working to educate young people.

'NOW WE ARE INVOLVED'

'In the past, Lamu women's interaction with mangroves was very limited due to our culture and role in society. But now we are involved, albeit still at some low level. With support from organisations such as Wetlands International, we are involved in initiatives that foster both the conservation of mangrove resources and sustainable livelihood options which in turn reduce the pressure on our coastal forests.'

Fatuma Bwana Mzee,
chair of the Tarazak Women Group,
Matondoni village

Mohamed Kassim, one of the Mangrove Champions of PRATI, in Pate.

Upscaling the work of Wetlands International across Lamu and beyond requires a strong network of mangrove stakeholders and a clear and effective governance regime. Our work in this area therefore began with an **in-depth stakeholder analysis** to identify how we could most effectively position ourselves to coordinate the aims of the programme and contribute to key gaps.

We've built strong relationships with key stakeholders including the **County Government of Lamu**, Kenya Forest Service, Kenya Forestry Research Institute, Kenya Wildlife Service and the National Environment Management Authority. In parallel we've worked with grassroots communities in mangrove areas across the Lamu and Tana land and seascape to identify and address the socioeconomic and conservation issues they face.

Through our relationship with the County Government of Lamu we've identified areas of mutual interest aligned with the County Integrated Development Plan – we're now working together to upscale the use of energy-efficient cookstoves, support community fisheries initiatives, and establish Club Mikoko. Club Mikoko is a group of pupils/students that are concerned about mangroves and are committed to learning and raising awareness about environmental issues. They have a desire to reduce negative environmental impacts in their schools, homes and communities.

Awareness-raising is an important aspect of our work, and we've developed and translated materials and organised training on the importance of and principles behind the CBEMR approach. This has included targeting specific groups, with special attention given to women and youth. We've also identified and trained a group of eleven local and three technical **'mangrove champions'** to help upscale our impact through community outreach and action.

Wetlands International has participated in various **strategic events** at different levels, including the 12th Western Indian Ocean Marine and Science Association (WIOMSA) symposium in October 2022. Here we led discussions on the role of regional and global networks and partnerships such as the Global Mangrove Alliance in fostering coherence and cohesiveness in mangrove conservation and management.

King Fisher perching in the mangroves in Lamu.

4. NATIONAL AND LANDSCAPE SCALE

We're strategically targeting key sectors to upscale our impact across Kenya and beyond.

'INTERESTING TO SHARE IDEAS TO SEE HOW WE CAN COME UP WITH REPLICABLE BEST PRACTICES.'

'For me, it's the new functionalities that have been added, like the restoration potential and the maps showing changes. This will be key for conservation and restoration plans. It was also interesting to learn about the case studies from the mangrove researchers across Africa and share ideas to see how we can come up with replicable best practices.'

Eva Ntara,
Wetlands Consultant with FAO's IMPRESS project (Improving Measurement for Payments to Reduce Emissions and Strengthen Sinks) - a globally relevant pilot project in Kenya for countries wishing to move towards high-integrity forest monitoring systems enabling access to climate finance.

We've facilitated national dialogues on mangrove status and conservation issues in Kenya under the **National Mangrove Management Committee**, which we were invited to join along with high-profile actors including WWF, TNC, and the IUCN. This Committee is underpinned by the **National Mangrove Ecosystem Management Plan** (2017–2027), which facilitates coordination and collaboration between stakeholders. Through this, a work plan was adopted for prioritising actions for implementation in 2023, including the establishment of subnational (county-level) mangrove committees.

Wetlands International has also been co-opted onto the Key Biodiversity Areas National Liaison Committee. Led by the Ministry of Environment and Forestry, this Committee brings together stakeholders working on restoration in Key Biodiversity Areas – such as the Tana Delta – to share, discuss and agree on key issues at site and policy level.

FAO and the KFS asked us to support them in collating data on **mangrove mapping**. We now provide our Global Mangrove Watch data to help Kenya report on its global environmental commitments, such as its Nationally Determined Contributions (NDCs) under the Paris Agreement.

We have trained the KFS and community patrol groups in the use of Global Mangrove Watch (GMW). Additionally, we have supported the setup of command centres, in which 'change alerts' from the GMW system are regularly provided and analysed. These alerts are used by KFS and community groups to do targeted patrols to address deforestation. More command centres will be established along the Kenyan coast, which will all use the Global Mangrove Watch alerts.

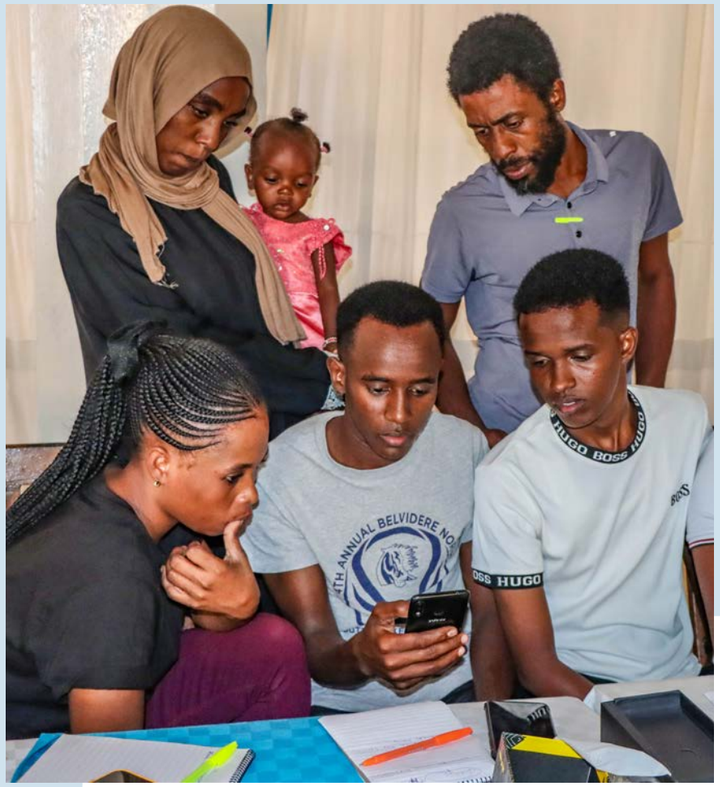
Opening of the Lamu Alert Centre.

Wetlands International is part of a team that's developing a r**oadmap for mainstreaming blue carbon solutions** into coastal development programmes in Kenya to help the country achieve its climate commitments. Our contribution to mangrove conservation and restoration in Lamu will be used to support the national government in developing blue carbon strategies for climate change mitigation.

Together with GIZ, the Nairobi Convention, IUCN and WWF, we launched a Multi-Stakeholder Initiative on a **sustainable blue economy** in the Western Indian Ocean region – Our Blue Future.

At national level, we're actively sharing best practices with the scientific community through conferences on energy-efficient fuelwood-based cookstoves for sustainable mangrove forest management in Lanu and Tana River Counties; on the application of Global Mangrove Watch in Kenya; and on Community-Based Ecological Mangrove Restoration approaches.

Kenya is also developing **national mangrove restoration guidelines**, supported by Kenya Marine and Fisheries Research Institute, WI and WWF-Kenya. These build on the Global Best Practice Guidelines on Mangrove Restoration developed by the Global Mangrove Alliance among others, led by WI and Conservation International in collaboration with dozens of scientists



Lamu Alert Centre.

'THE COLLABORATION BETWEEN KENYA FOREST SERVICE'S NATIONAL FOREST ALERT SYSTEM AND GLOBAL MANGROVE WATCH'S MANGROVE ALERTS WILL REDUCE COSTS AND IMPROVE VERIFICATION OF MANGROVE LOSS.'

Dr Benjamin Kinyili
ACTG Manager, Forest Survey and Information Management Department

A mapping exercise conducted at a restoration site in Pate, Lamu.

NEXT STEPS

We have made strong progress improving the conservation status of mangroves in the region, but we need support to continue building on this work, demonstrating best practices and engaging communities to significantly scale up efforts to restore mangroves.

Your support can help us deliver priority activities including:

- **Encouraging local communities** to develop a sense of ownership and responsibility for their mangroves. This will include training in activities such as restoration techniques, using resources sustainably, patrolling, and reporting illegal activities using Global Mangrove Watch.

- **Working with government agencies** to help reduce deforestation and manage land sustainably in the Tana River Basin. This work will include supporting livelihoods and value chains that do not overexploit mangroves, in areas such as mud crab fattening, ecotourism and beekeeping.

- **Collaborating with relevant stakeholders** in upstream Tana River areas, including water resource management authorities and agricultural sectors, to align land and water use practices with mangrove conservation goals. This should involve integrating upstream land-use planning into the broader landscape-level strategy to ensure that activities such as irrigation and water extraction do not negatively impact the mangrove ecosystems in Lamu and Tana.

A member of PRATI, at their crab fattening farm in Pate.

Mangrove restoration training in collaboration with Mangrove Action Project.

CONTACT

Thérèse Musabe
Programme Director Mangrove Capital
Africa Wetlands International
tmusabe@wetlands-africa.orgy

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