



## NATURE PROJECT IMPLEMENTATION

**EBA:** Ecosystem-based Adaptation (EbA) as one of the adaptation approaches that involves the conservation, sustainable management and restoration of ecosystems

# How ecosystem-based adaptation approaches help communities to cope with climate change impacts

*The case of Mufindi, Chemba, Kiteto and Same districts*

By Jafari Juma

Communities have been adapting to climate variability for centuries, but today their coping mechanisms are being immensely challenged by the fast-changing climate.

Shifting weather patterns as a result of climate change, affecting rainfall and temperature, are likely to impact the ecosystem goods and services on which people rely.

Climate change is also likely to magnify existing risks of and vulnerability to disasters. It is therefore critical to develop adaptation capabilities to be able to deal with these challenges.

In response to global climate change impacts, most countries including Tanzania have focused on 'hard' or 'grey' infrastructure options such as embankments for flood control or new reservoirs to cope with water shortages.

These options can be costly to build and maintain, and generally do not take the benefits of ecosystem-based adaptation (approaches) into account.

Ecosystem-based Adaptation (EbA) as one of the adaptation approaches is involving the conservation, sustainable management and restoration of ecosystems which provide cost-effective solutions that can help communities adapt to the impacts of climate change.

Examples of such nature-based solutions to climate change include sustainable agriculture, integrated water resource management, sustainable forest management, beekeeping, conservation framing, sustainable irrigation and many others.

The EbA harnesses biodiversity and ecosystem services to increase resilience and reduce the vulnerability of human communities and natural systems to climate change.

In Tanzania, there are communities making efforts to protect ecosystems through various activities, which, in

**The project's goal is to enable ecosystems to provide proper services that improve food security, allowing communities to utilize resources, increase income, adapt to climate change, and protect the environment,"**

**Mr. Alfei Maseke** | NATURE project Manager.



The Senior Project Manager for the New Approaches to Upscale Resilience and Ecosystem (NATURE) project at CARE Tanzania, Mr. Alfei Maseke (right) listens to the Environmental Officer of Chemba District, Ms Zena Omary (left) as she speaks on various seeds and tree seedlings that the district council is planting and distributing to communities.

addition to building their resilience against the impacts of climate change, also help them generate income.

However, it should be recognized that a stable ecosystem is an economic asset for communities and enhances resilience against the impacts of climate change.

Therefore, it is the responsibility of everyone—starting with the government through various ministries, policymakers, development partners, and both national and international organizations—to recognize and participate in efforts to protect and preserve the ecosystem for the well-being of our world and future generations.

CARE Tanzania is among the key stakeholders helping communities to protect ecosystems to withstand the challenges of climate change with the support of the New Approaches to Upscale Resilience Ecosystem Based

Adaptation (NATURE) project.

The project aims to increase resilience of communities especially most-marginalized people through improving ecosystem services in drought prone areas in Tanzania.

The project addresses social vulnerabilities such as food insecurity, access to resources, water use conflict, human wildlife conflict, pastoralist migration and land-use conflicts to support restoration of ecosystem services and contribute to improvement of Tanzania legal and development policy framework as it addresses a core issue that affects restoration of ecosystem services.

The NATURE project is being implemented in five districts: Mufindi (Iringa), Chemba (Dodoma), Kiteto, and Simanjiro (Manyara), as well as Same (Kilimanjaro) by CARE Tanzania through the Global EbA Fund and

funded by the International Union for Conservation of Nature (IUCN).

My journey to the target districts from which the project is being implemented started by visiting the beneficiaries of the EbA actions to talk about the benefits, success factors, lessons that can be learned, and estimates cost of the particular EbA action.

## Mufindi (Iringa)

Mufindi District in the Iringa region is among the areas historically affected by drought, one of the impacts of climate change. Mufindi, one of the five districts in Iringa Region, has established strategies to ensure communities protect ecosystems through various activities that also help generate income.

To achieve this, communities have been encouraged to form groups and engage in various income-generating

activities that support the conservation of ecosystems. The Lugoda Lutali Group at Sadan Ward is one of the groups excelling in ecosystem conservation through their income-generating activities.

The group's chairman, Kelvin Lihweuli, says this group, which includes 14 women and nine men, is focused on planting water-friendly trees used to conserve water sources, known as Mivengi. So far, they have more than 750 seedlings.

"These trees are water-friendly and are used to conserve water sources. Apart from these trees, we also engage in beekeeping, and we currently have 60 beehives, including both modern and traditional ones. Also we have a water source capable of holding 21,000 liters of water," says Lihweuli.

In Igomea village, the local group engages in various activities, including fish farming. They have a pond that not only helps raise fish but is also used to preserve other aquatic life.

The group's chairman, Elias Mtambalike, says their pride is the conservation of the Liendembele River, the primary water source for the villagers.

"We have set laws that require everyone to be an environmental champion, especially of water sources, because this river is essential for many activities, including irrigation farming, livestock watering, household use, and fish and aquatic life farming," says Mtambalike.

The Mufindi District Planning Officer, Elisey Ngoi, says they have been assisting these groups by providing municipal loans that support their activities.

## Chemba (Dodoma)

Chemba is among the districts facing the challenge of drought and unreliable rainfall, a situation that threatens food security, causes land conflicts between farmers and pastoralists, and leads to the degradation of the few available water sources.

Environmental conservation groups, tree planting, beekeeping, fish farming, and water source conservation are some of the major efforts being implemented in this district, led by the local council in collaboration with stakeholders.

Villages such as Waida, Gwandi, and Kwa Mtoro are exemplary, having achieved significant success due to ecosystems conservation activities led by local groups.

The communities in these villages have witnessed substantial improvements, including water availability as a result of tree planting around water sources, establishing bylaws that help protect these sources, and engaging in beekeeping, which is one way of conserving forests and water sources.

The chairman of the Vumilia Group,



A protected pond used by Kisiwani Ward residents in Same District. The pond is the main water source for farming and livestock activities.



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Pius Chima, says beekeeping is one of the ways they use to protect water sources and forests.

“Areas with beehives are off-limits to livestock because cattle fear bees. So, in addition to generating income from honey harvesting, we also protect the environment and water sources,” Chima says.

### Simanjiro and Kiteto (Manyara)

Simanjiro and Kiteto are among the districts in the Manyara Region where the NATURE project is being implemented. These districts have long faced challenges of drought and conflicts between farmers and pastoralists, which threaten economic activities.

In Simanjiro District, various agricultural activities are conducted, such as rice farming in the village of Ngage and other areas within the district. Simanjiro is also one of the leading districts in livestock keeping due to the Maasai people, the main ethnic group in the area.

To ensure the sustainability of agricultural activities even during drought periods, community members have initiated various income-generating activities that help conserve the environment and improve ecosystems.

These activities include irrigation farming, demonstration farms, beekeeping, fish farming, and greenhouse farming. These initiatives enable residents to earn income while protecting ecological systems, helping them address the challenges of climate change.

Ndedo Village in Kiteto District is one of the villages that have achieved significant success in environmental conservation and natural resource protection.

This village is part of the 5 villages that have established a Wildlife Management Area (WMA) known as Makame WMA to ensure the area is not encroached upon and also to benefit the community from the Carbon credit trade and sustainable and ecological hunting.

WMA Officer in Ndedo village, Mr. Kisaro Thomas says that carbon credits from Makame WMA generate annual revenues of Sh1.5 billion, while ecotourism and sustainable hunting in the area generates Sh500 million annually. These funds have greatly contributed



**Mufindi District's Igomea Group chairman, Elias Mtambalike, gives a briefing on modern beekeeping, which not only generates income but also serves as a method of forest and water source conservation.**

to the development of the village.

The revenue earned from the sale of certified carbon credits and ecotourism is paid directly to forest communities, allowing them to manage their own development needs.

Through WMA, the communities receive their revenue in bi-annual payments when the villagers come together to determine how to share the revenue

Educational funds to improve infrastructure include the building of classrooms, dormitories and teachers' offices, community development initiatives e.g. construction of teachers' housing, construction of police posts and village offices.

Paysalaries and operational activities for WMA officials include Village Game Scouts (VGS) who patrol and monitor the forest and its wildlife, health services and improving health infrastructure and strengthening governance at a local, ward and district level, including the building of required infrastructure to enforce village by-laws.

### Same (Kilimanjaro)

Same District has developed strategies to empower communities to protect the environment, including tree planting, conserving water sources, and

managing land use effectively to reduce land conflict issues.

In addition to tree planting activities, communities are encouraged to establish tree nurseries to ensure a steady supply of seedlings for planting. So far, a total of 35 tree nurseries have been established by communities in the wards of Hedaru, Vunta, Mankanya, Maore, Kisiwani, Vumari, Mtii, Bombo, and Myamba.

From July 2023 to July 2024, the same district planted 1,235,156 trees in different places including near to the water sources, degraded open areas, around farms and in the public institutions.

Additionally, there are beekeeping groups, which not only benefit from honey products but also help prevent wildlife from encroaching on forests and water sources.

In the village of Maore, located in Maore Ward, community members have formed various groups to manage environmental conservation activities, including tree planting, water source conservation, and patrol units to protect wildlife

such as elephants from Mkomazi National Park, which invade farms and settlements.

CARE Tanzania Senior Project Manager - NATURE project Mr. Alfei Maseke says the project's goal is to enable ecosystems to provide proper services that improve food security, allowing communities to utilize resources, increase income, adapt to climate change, and protect the environment.

He explains that the project collaborates with various ministries, including the Ministry responsible for Agriculture, Water, Livestock, Fisheries, Environment, local Government, Dis-

aster management, local Government Authorities (Mufindi, Same, Kiteto Chemba and Simanjiro), Tanzania Private Sector Foundation (TPSF), Water Basin Authorities (Wami Ruvu, Pangani and Internal Drainage Basins).

Local NGOs, CBO's, CSOs Networks working in the selected districts and wide range of stakeholders such as those involved with research, advocacy and policy making processes around EbA related fields such as agriculture, livestock, natural resources management and tourism and communities in the targeted districts.

Together, they aim to create favorable conditions through policies and regulations to empower communities to tackle climate change challenges by engaging in income-generating activities while conserving and protecting ecosystems.

Ecosystem-based adaptation strategies such as tree planting near water sources, farms, and public institutions, beekeeping in catchment areas, conservation agriculture, drip and fallow irrigation, water harvesting, block farming, indoor livestock and poultry farming, designated grazing zones, forest conservation, tree enrichment in degraded areas, carbon credit initiatives, aquaculture, ecotourism, sustainable land use, and conflict resolution over land and water, are making a measurable difference.

Adoption of the application of village land use plans has provided significant role of promoting sustainable use of land and supporting ecosystem restoration

The cost of implementation are low, for example Tsh 27 million (11,064 USD) were used to create three water facilities in Simanjiro district for fish farming, beekeeping projects is ranging from Tsh 50,000-100,000 (20,490-40,980 USD) depending on the localities, cattle farming starting from Tsh 2 million (820 USD), goat farming starting from Tsh 150,000 (61,470 USD).

Flexibility and community engagement in planning and decision making, mitigation measures towards reducing human wildlife conflicts have increased human resilience, encouraging the migrant's pastoralist to have permanent settlements, this will reduce pressure in the ecosystem.



**A livestock doctor from Kiteto District Council gives instructions on modern cattle farming.**



**Modern beehives hung in a forest in Mufindi District.**