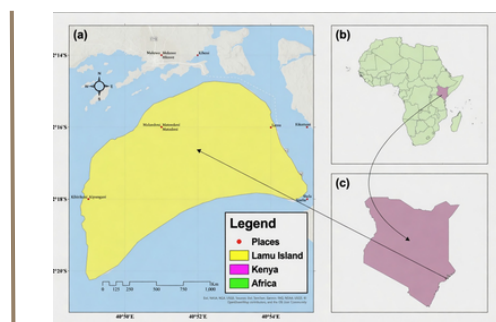


## POLICY BRIEF

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# STAKEHOLDER ENGAGEMENT FOR NATURE-BASED SOLUTIONS IN MANAGING CLIMATE CHANGE IMPACTS ON GROUNDWATER-DEPENDENT MANGROVES IN LAMU ISLAND, KENYA

Groundwater-dependent mangroves in Lamu Island face growing threats from climate change, hydrological disruption, and human pressures, yet local communities remain largely excluded from conservation decisions. This study assessed stakeholder perceptions of climate impacts, evaluated existing and potential Nature-based Solutions (NbS), and examined how stakeholder engagement influences NbS adoption and governance in this globally significant coastal ecosystem.



Map of Lamu Island. Generated with ArcGIS

## OVERVIEW

Groundwater-dependent mangroves in Lamu Island, Kenya, provide vital coastal protection, fisheries, carbon sequestration, and livelihoods. They face growing threats from climate change (rising sea levels, erratic rainfall, and temperature rise) and human pressures (urban expansion, pollution, and overharvesting). Although Kenya's National Mangrove Ecosystem Management Plan promotes NbS, implementation is hindered by limited stakeholder participation, weak governance, and poor integration of local perspectives. This research examined how stakeholder perceptions and engagement influence the adoption of NbS for mangrove management in Lamu Island.

## POLICY RECOMMENDATIONS

- 1. Institutionalize meaningful stakeholder participation:** Lamu County Government and national agencies should establish legally recognized co-management platforms that give local communities, women's groups, and youth representatives decision-making power in NbS planning and implementation.
- 2. Prioritize hydrological and livelihood-integrated NbS:** Shift from tree-planting-only approaches to integrated NbS that include tidal channel restoration, community-led water management, and livelihood options such as beekeeping, silvofisheries, and agroecology.
- 3. Strengthen financing and capacity for inclusive NbS:** Drawing on carbon credit income, create dedicated county-level funds to enable payments to communities for protecting ecosystems. Provide targeted training and infrastructure support to community groups to overcome financial and technical barriers to scaling effective NbS.

## KEY FINDINGS

### 1. Livelihoods shape climate perceptions:

Local communities perceive climate change primarily through its effects on their livelihoods. They link pollution, industrial activities, rising sea levels, erratic rainfall, and higher temperatures to declining fish catches, increased salinity, and mangrove degradation.

### 2. Existing & potential NbS:

Restoration-based NbS, such as mangrove planting, dominate current efforts in Lamu. Livelihood-integrated practices, such as beekeeping and agroforestry, are limited, while hydrological NbS, such as tidal channel restoration, are almost absent. Promising options include mangrove-integrated crab farming, nature-based aquaculture, living shorelines, and an eco-corridor network.

### 3. Stakeholder engagement reveals a power imbalance:

Local communities, women, and youth show strong interest in mangrove conservation but have limited decision-making influence, while national agencies, including KMFRI, and international NGOs (such as WWF) retain decision-making power



A visit to Amu Safari Swimming and Mangrove Nursery Group in Lamu Island

## RESEARCH APPROACH

**Methodological Design:** The study used a mixed-methods design involving household surveys (N=140), key informant interviews (N=9), focus group discussions (N=3), a transect walk, and a systematic literature review (N=38).

**Limitations:** The study used a cross-sectional design which captured perceptions at a single point in time. This restricted the assessment of temporal changes in attitudes.

## CONCLUSION

These findings highlight the urgent need for a paradigm shift in mangrove conservation in Lamu Island. Effective NbS must move beyond tree planting to include hydrological restoration and livelihood-integrated approaches. To ensure inclusive and sustainable outcomes, these solutions should integrate scientific knowledge with local perspectives and address governance inequities.

The study's findings offer practical, context-specific insights for Lamu County and contribute to global discussions on building climate-resilient coastal ecosystems through equitable and effective NbS. This is in clear support of SDG 13 (Climate Action), SDGs 14 & 15 (Life Below Water & Land), SDG 5 (Gender Equality), and SDG 16 (Peace, Justice, & Strong Institutions), particularly through the Global Biodiversity Framework (Targets 2 and 8).

## REFERENCES

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