

RESEARCH BRIEF

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Topic: Assessing the Impact of Carbon Trading Schemes on Mangrove Forest Ecosystem Services and Household Welfare: Evidence from Kenya Coastal Communities

*Based on the EFD Discussion Paper
(https://swopec.hhs.se/gunefd/abs/gunefd2025_013.htm) by the authors.*

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Research questions

The study addresses the following research questions: What is the overall impact of carbon trading on ecosystem services and household welfare? What are the gender-disaggregated implications of carbon trading on household welfare?

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Key Messages

- Kenya promotes carbon trading schemes through two pilot projects, namely *Mikoko Pamoja* and Vanga Blue Carbon Forest, to conserve mangrove forests.
- Participation in a carbon trading scheme offers the dual benefit of enhancing access to ecosystem services and improving household welfare.
- Non-participant households would be better off participating in the scheme than participant households.
- Carbon trading schemes are empowering women as they improve the welfare of female-headed participating households more than non-participating households.

Background and Methodology

Mangrove forests provide important benefits for coastal communities, including food, income, and protection against storms and climate impacts. However, these ecosystems are under pressure due to overuse and climate change. In response, carbon trading schemes have been developed to support the protection and restoration of mangrove forests by linking conservation efforts to carbon markets.

In Kenya, two pilot initiatives—*Mikoko Pamoja* and Vanga Blue Carbon Forest—have been implemented in Kwale County to conserve mangroves while generating benefits for local communities. Despite growing interest in these programs, there is still limited evidence on how they affect household well-being and access to ecosystem services, particularly for women.

This study aims to fill this gap by assessing how participation in carbon trading schemes affects household welfare, food security, and access to mangrove-related resources. The study was conducted in 2024 in Lunga Lunga and Msambweni sub-counties in Kwale County. It compares households that

participate in carbon trading schemes with those that do not.

To ensure a fair comparison, the analysis accounts for differences between participating and non-participating households, allowing us to estimate how households' outcomes would change if they decided to participate or not. The study also examines whether impacts differ between male-headed and female-headed households.

Results

- **Level of participation:** Most households in the study area do not participate in carbon trading schemes. Non-participation is particularly high among female-headed households.
- **Improved household welfare:** Participation in carbon trading schemes improves household living standards. Participating households spend more per person each month than they would if they did not participate. Likewise, households that currently do not participate would experience a substantial increase

in spending if they joined the scheme.

- **Improved food security:** Participation is associated with better food security. Households involved in carbon trading schemes have more diverse diets, indicating improved access to food.
- **Enhanced ecosystem services provision:** Households that participate in carbon trading schemes have better access to mangrove-related ecosystem services. The value of resources such as fish would be higher for non-participating households if they decided to participate.
- **Gender-disaggregated impact:** Both male-headed and female-headed households benefit from participation. However, the positive effects are larger for female-headed households, suggesting that carbon trading

schemes can help reduce gender-related inequalities in welfare.

Policy Implications

- Carbon trading schemes can simultaneously support environmental conservation and household well-being in coastal communities.
- Policies should focus on increasing community participation, especially among households that are currently excluded from these programs.
- Special attention should be given to encouraging and supporting the participation of women, as they experience particularly strong benefits.
- Strengthening and scaling up carbon trading schemes can contribute to the long-term and sustainable management of mangrove forests in Kenya.

The Environment for Development initiative is a capacity-building program in environmental economics focused on international research collaboration, policy advice, and academic training. It consists of centres in Central America, Chile, China, Colombia, Ethiopia, Ghana, India, Kenya, Nigeria, South Africa, Sweden (University of Gothenburg), Tanzania, Vietnam, Uganda, and the US (Resources for the Future). Financial support is provided by the Swedish International Development Cooperation Agency (Sida).