

Artisanal seaweed farming in Kenya: Value chain assessments and community livelihoods

Holeh Gladys¹, Mees Jan², Asselman Jana³, Njiru James⁴, Mirera David⁵, Janssen Colin⁶ and Semmouri Ilias⁶

- ¹ Blue Growth Research Lab, Ghent University, Bluebridge Ostend Science Park, Wetenschapspark 1, 8400 Ostend, Belgium
Email: gladys.holeh@ugent.be
- ² Flanders Marine Institute (VLIZ), InnovOcean Campus, Jacobsenstraat 1, 8400 Oostende, Belgium
- ³ Blue Growth Research Lab, Ghent University, Bluebridge Ostend Science Park, Wetenschapspark 1, 8400 Ostend, Belgium
- ⁴ African Institute for Capacity Development (AICAD). P.O. Box 46179-00100, Nairobi, Kenya
- ⁵ Kenya Marine and Fisheries Research Institute, P.O. Box 81651-80100 Mombasa, Kenya,
- ⁶ Ghent University, Blue Growth Research Lab, Campus Coupure, Building F – 2nd Floor, Coupure Links 653, 9000 Ghent, Belgium

In many coastal regions worldwide, especially in the Global South, seaweed farming is growing as a critical source of income and sustenance, reinforcing food security and providing jobs for small scale actors. However, in the Western Indian Ocean region, the extent to which smallholder producers translate seaweed farming into stable, equitable income and decent jobs remains unclear. In Kenya, commercial seaweed farming is relatively recent and geographically limited to a few pockets along the south coast, and there is still little empirical evidence on how its adoption has affected the livelihoods and income dynamics of farming households. To identify leverage points for resilient and inclusive sector growth, we conducted an integrated socioeconomic and value-chain assessment of artisanal seaweed farming along Kenya's south coast, based on a structured survey of 158 active farmers across four active seaweed farming communities (Kibuyuni, Kijiweni, Mwazaro, Tumbi). We map the full pathway "from farm to market" covering farmer demographics, current farming practices, income dynamics, market relationships, post-harvest activities, training and support, and perceived environmental and economic challenges. Women were found to drive the sector (83.5% of respondents), often within larger households, underscoring the gendered importance of seaweed as an accessible livelihood. Median self-reported monthly household income rose from 2,000 KES (USD 15.50) before interventions on seaweed farming to 6,500 KES (USD 50.38) after adoption (+225%) of the farming, highlighting strong entry-level livelihood gains. However, most farmers are paid quarterly (50.6%), creating cash-flow gaps despite higher annual income. Seaweed cultivation primarily serves the hydrocolloid industry, with production dominated by *Eucheuma denticulatum*. In contrast, *Kappaphycus alvarezii* remains less prevalent due to its higher susceptibility to environmental stresses, disease and predation. Critically, market access is highly concentrated: a single export-oriented buyer accounts for 75% of reported sales, consistent with a "captive" chain structure in which price, quality, and payment terms are set by the lead firm. While this provides an outlet, it suppresses bargaining power and amplifies exposure to policy or demand shocks. On-farm value addition (e.g., soaps, shampoos, powders etc.) remains rare (20% of interviewed farmers), and local food use is uneven and low across communities signaling a missed opportunity to diversify markets and retain value locally. By assessing the socioeconomic benefits and constraints of seaweed farming, we propose pathways for regulators, researchers, and local communities to scale this practice as an inclusive and sustainable blue-economy livelihood. Targeted improvements in production, market, value-chain governance, and local processing could enhance farmer incomes while reducing vulnerability to climate and market shocks.

Keywords

Seaweed Aquaculture; Blue Economy; Gender and Livelihoods; Value-chain Governance; Market Diversification