SOCIOECONOMICS · AQUACULTURE VALUE CHAINS

Value Chain Analysis of Small Water Bodies' Fishery

Unlocking the aquaculture potential of dams, satellite lakes and ponds across Migori and Siaya Counties for food security, income and livelihood diversification.

REFERENCE	ISSUED	REGION
C82_3(2)	**June 2026**	**Migori & Siaya Counties**

FRESHWATER SYSTEMS / SOCIOECONOMICS

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small water bodies assessed across two counties

92.3%
of communities willing to participate in aquaculture

55.4%
prefer Nile tilapia as the culture species

66.2%
of sites lack fencing; 30.8% report drownings

Background

Small water bodies (SWBs), including dams, satellite lakes, quarries and ponds, are scattered throughout the Lake Victoria Basin. They are globally valued for drought mitigation, water supply and biodiversity conservation, yet most remain underused for fish production. This study assessed the SWB fishery value chain in Migori and Siaya Counties in order to unlock its potential for food security, income generation and livelihood diversification.

Methods

Eleven SWBs were surveyed. In Migori these were eight community dams (Gogo, Bondo Nyironge, Nyamome, Nyakisese, Karamu, Silanga, Suka and Siabai), with depths of 3 to 19.8 m and sizes of 5 to 30 acres. In Siaya they were the Kanyaboli, Sare and Namboyo satellite lakes together with dams along the River Yala system, with depths of 2 to 20 m and permanent water supplied by the river. Sixty-five respondents (27 in Migori, 38 in Siaya) were interviewed using the KoboCollect Toolbox, and data were analysed in SPSS version 25 using descriptive statistics and Likert-scale analysis.

Respondent profile: 84.6% male; mean age 46.5 ± 12.5 years; 61.5% with primary and 26.2% with secondary education; main occupations fishing (52.3%), farming (21.5%) and business (15.4%); 73.8% earning KES 5,001 to 20,000 per month.

Key Findings

Strong, near-universal demand for aquaculture

Communities overwhelmingly view fish farming as beneficial, and willingness to participate is near-universal, reaching 100% in Migori and 86.8% in Siaya. The SWBs are already multi-use: grazing along the edges (72.3%), fishing (70.8%) and domestic water storage (40.0%). Gogo Dam additionally supports hydroelectric generation, while the Siaya satellite lakes serve as critical refugia for endemic cichlid species.

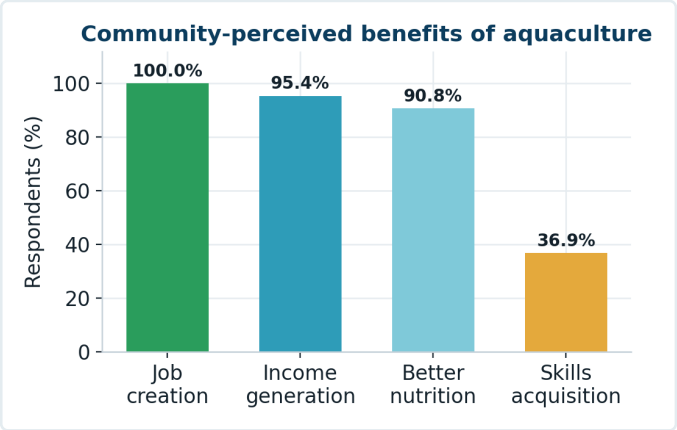


Figure 1. Job creation and income generation are seen as the leading benefits of aquaculture; skills acquisition lags and signals a clear training need.

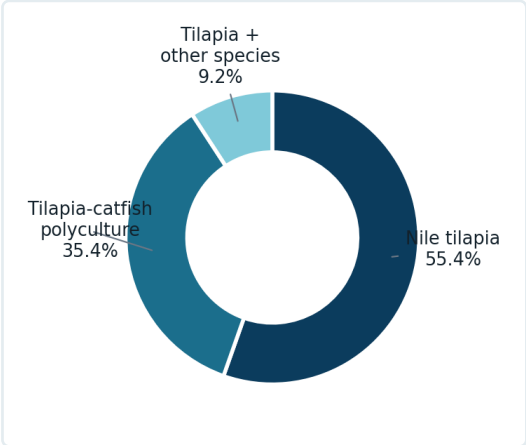


Figure 2. Nile tilapia is the species of choice, with strong interest in tilapia and catfish polyculture.

Water quality and site conditions are generally favourable

On a 1 to 5 scale, respondents rated visible clarity at 3.89, water colour at 3.85 and smell or odour at 3.85, all generally favourable. The absence of pollutants scored lower at 3.37, indicating that pollution remains a concern at some sites. Among the fish-farming potential factors, year-round water availability was the highest rated at 4.89, followed by site modifiability at 4.48 and an existing culture of aquaculture at 4.29.

Two counties, complementary strengths

The counties present complementary profiles. Migori has better market access (4.48 versus 2.61) but weaker input supply (2.37 versus 3.82) and less available training (2.85 versus 4.47). Siaya has stronger inputs and training but poorer markets, and lower youth and women engagement (2.61 versus 4.67 in Migori).

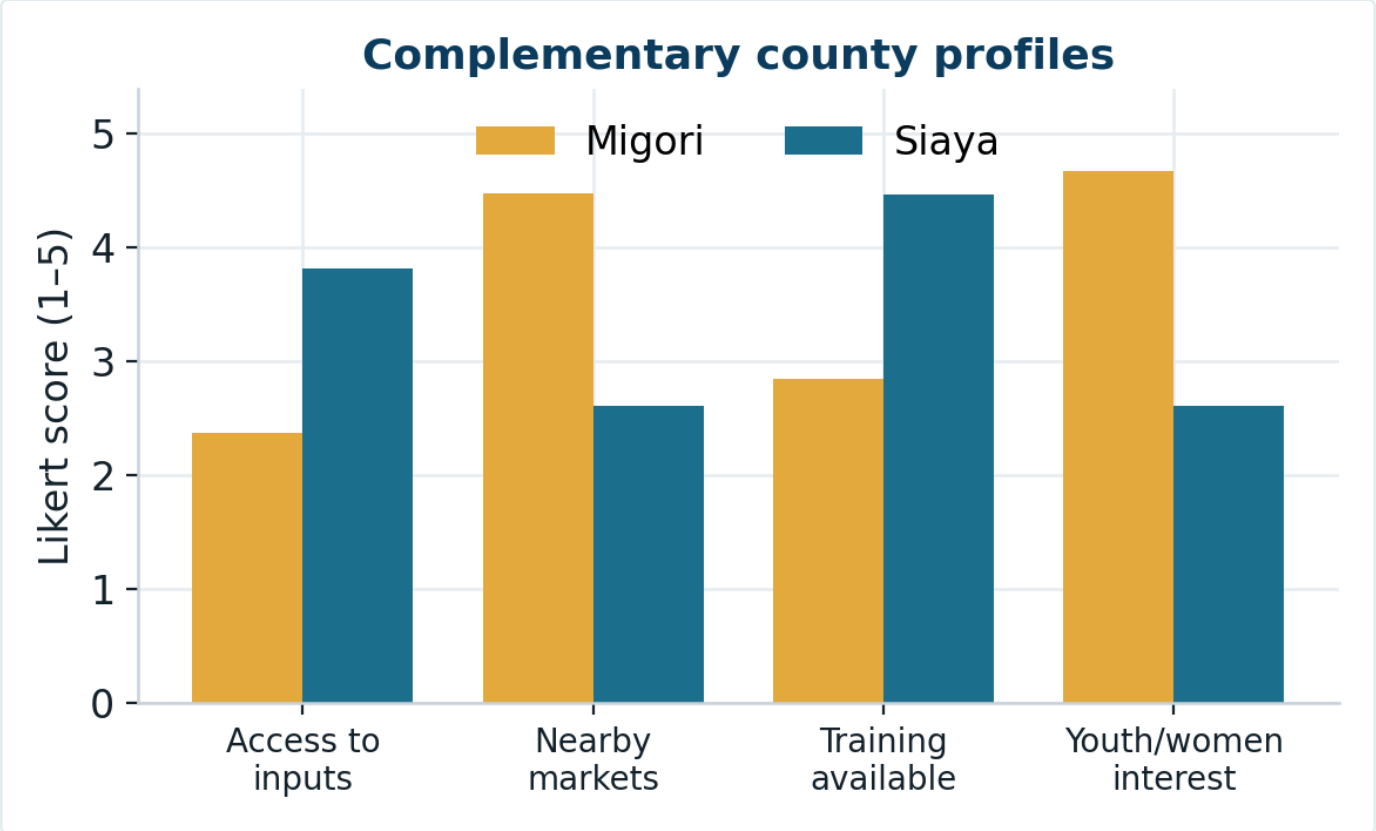


Figure 3. County comparison of key value-chain enablers (Likert 1 to 5): Migori leads on markets and youth and women interest; Siaya leads on input access and training availability.

Conclusions

- SWBs across both counties hold significant untapped potential for aquaculture development.
- Fish farming is widely seen as beneficial for jobs, income and nutrition, and community willingness provides a strong foundation for intervention.
- Water quality and site conditions are generally favourable, though pollution concerns persist at some sites.
- Serious safety gaps exist: 66.2% of sites lack fencing and 30.8% reported drowning incidents.

Recommendations

1. Stock fish at low densities so that domestic, irrigation, grazing and aquaculture uses can coexist.
2. Strengthen training and extension in Migori, where the gap is most pronounced, and develop input supply chains (fingerlings and feeds) there.
3. Strengthen market linkages in Siaya, and encourage youth and women's participation, particularly in that county.
4. Install safety measures (fencing and signage) at all SWB sites to prevent drownings.
5. Prioritise community-based aquaculture management models built on existing cooperatives, and establish environmental-monitoring protocols.
6. Conduct further studies with larger samples for more robust statistical inference.

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Suggested citation: Githukia, C. et al. (2026). Value Chain Analysis of Small Water Bodies' Fishery in the Lake Victoria Basin. KMFRI Factsheet C82_3(2).