

From Vulnerability to Resilience: Kilifi County's Integrated Blue Economy Approach

County:	Kilifi County, Kenya			
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Target Audience:	County governments, national government agencies, development partners, World Bank, NGOs, community organizations, fisheries-dependent communities, private sector, researchers and practitioners			
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Introduction

For generations, communities in Kilifi County have relied heavily on fisheries and coastal resources for food, employment and income. However, declining fish stocks, pressure on nearshore fisheries, inadequate fishing equipment, post-harvest losses, weak markets and degradation of mangroves increasingly threatened these livelihoods. Poverty, food insecurity and over-reliance on fishing as a single source of income compounded these challenges, while women and youth faced limited access to productive resources, skills and economic opportunities.

The Kenya Marine Fisheries and Socio-Economic Development Project (KEMFSED PROJECT), implemented from 2020–2025 by the Government of Kenya with support from the World Bank and five Coastal Counties of Kenya including County Government of Kilifi, responded through an integrated Blue Economy approach. Instead of addressing fisheries, poverty, conservation and livelihoods separately, the project combined sustainable fisheries management with offshore fishing, aquaculture and mariculture, climate-smart agriculture, livestock, conservation, enterprise development and social services including education.

Approximately KSh 1.48 billion was invested through 287 sub-projects across 32 Wards and six Sub-Counties, directly benefiting 24,519 people, including 14,767 women and 9,752 men.

The project therefore sought not only to improve incomes, but to build resilient communities with diversified livelihoods, stronger institutions, restored ecosystems and greater opportunities for women and youth.

IMPLEMENTATION OF THE PRACTICE

The objective of KEMFSED PROJECT was to improve sustainable fisheries management and to improve livelihoods and resilience of fisheries-dependent communities. In Kilifi, this meant tackling the interconnected challenges facing coastal livelihoods – from diminishing nearshore fisheries and weak fisheries governance to post-harvest losses, limited livelihood options, environmental degradation and limited access to skills and markets.



Figure 1 Ihaleni-Kakuluni milkfish production increase of approximately 40–50%, including a 474 kg pond harvest

The project therefore adopted an integrated approach in which governance, production, conservation, infrastructure, skills and markets mutually reinforced each other. Instead of providing productive assets as stand-alone interventions, KEMFSED PROJECT integrated fisheries management with offshore fishing, cold-chain development, aquaculture and

mariculture, climate-resilient agriculture, livestock, conservation, enterprise development and investment in human capital.

Step 1: Strengthening Community Governance of Fisheries

KEMFSED PROJECT supported the establishment and operationalization of three Joint Co-Management Areas (JCMAs) across participating Beach Management Units (BMUs). The approach gave communities a stronger role in managing the fisheries resources on which they depended.

- The KAMAMKUKI JCMA, operating across Kilifi and Mombasa counties, focused on octopus, basket-trap and small-scale tuna fisheries and supported closure areas and coral restoration.

- The TAMKIBO JCMA in Kilifi North focused on octopus, small purse seine, basket-trap and small-scale tuna fisheries, with temporary octopus closures introduced at Kitoka and Vuma.
- The Malindi–Magarini JCMA focused on shallow-water prawn, octopus, tuna, reef demersal and snapper gillnet fisheries.
- Governance was reinforced through Monitoring, Control and Surveillance committees, patrol systems and capacity building. Approximately 130 BMU Executive Committee members received training in co-management, leadership and governance, while 60 Patrol Committee members were trained in fisheries surveillance and enforcement. Patrols were conducted monthly at BMU level and quarterly at JCMA level.

The project also supported fisheries closure areas and patrol stations, strengthening the practical application of community-based fisheries management.

Step 2: Moving Fishers Toward Offshore Opportunities

KEMFSED PROJECT increased productive capacity while seeking to reduce excessive dependence on nearshore fishing.

- 99 modern fishing boats and two eco-tourism boats were supported, alongside 159 outboard engines, 101 GPS units, 101 fish finders and 792 life jackets. The fishing boats directly benefited 1,967 community members.
- 206 coxswains received training in vessel handling and navigation, strengthening the human capacity required to use offshore fishing assets safely and effectively.



Figure 2 Tide Riders Self-Help Group fish landing of 2,454 kg on 24 October 2024

The approach combined productive assets with navigation, safety and fisheries-management skills rather than treating boat provision as a stand-alone intervention.

A documented example of increased production is Tide Riders Self-Help Group, which landed 2,454 kg of fish from its newly acquired offshore fishing boat on 24 October 2024.

Step 3: Building the Cold Chain

KEMFSED PROJECT strengthened the post-harvest component of the fisheries value chain through the distribution of 437 deep freezers to 22 fisheries-based CIGs and traders, reaching approximately 434 beneficiaries.

The freezers improved the ability of communities to preserve fish, maintain quality and delay sales until appropriate markets were available. The project report associates the supported deep-freezer intervention with approximately KSh 51.7 million in revenue.

The experience also showed that cold-chain equipment requires reliable electricity, maintenance, management capacity and market linkages to remain productive.

Step 4: Diversifying into Aquaculture and Mariculture

A total of 25 Community Interest Groups, benefiting 526 members, were supported to establish fish and crab production systems. Twenty groups established 40 freshwater fish ponds, while other groups developed marine crab production systems. The project facilitated the procurement and installation of 2,098 crab cages.

- 1,770 kg of tilapia, valued at approximately KSh 796,500.
- 1,298 kg of milkfish, valued at approximately KSh 454,300.
- 1,183 kg of crabs, valued at approximately KSh 945,600.

Combined reported revenue from these aquaculture and mariculture activities reached approximately KSh 2.196 million.

The intervention created alternatives to capture fisheries and demonstrated the potential of integrated production systems to diversify income and reduce reliance on wild stocks.

Step 5: Climate-Resilient Agriculture

Under the crops subsector, KEMFSED PROJECT supported 51 Community Interest Groups (CIGs) comprising approximately 1,322 farmers. Investments included irrigation boreholes, farm ponds, solar-powered pumping systems, petrol water pumps and solar-powered irrigation technologies.

- Approximately 365.5 acres were brought under reliable irrigation.
- The supported groups produced 391,971 kg of vegetables and cereals, generating approximately KSh 7,844,002 in gross income.

The Impact Booklet also reports an increase in average annual household income from crops from approximately KSh 15,000 to KSh 40,000 among supported households. This baseline comparison provides evidence of the livelihood significance of improved production systems.

The intervention was particularly important in the context of climate variability because it reduced dependence on unpredictable rainfall.

Step 6: Strengthening Livestock-Based Livelihoods

KEMFSED PROJECT supported 56 CIGs, reaching 1,289 members, including 853 women and 436 men.

- 665 dairy cows distributed to 665 households.
- 1,962 Galla goats.
- 12,500 chicks.
- 362 beehives.
- 30 beef cattle.
- 180 sheep for meat production.

Milk production increased from approximately 3 litres to between 10 and 15 litres per cow per day, supported by improved breeds, feeding and veterinary services.

- 75,500 litres of milk.
- 3,942 kg of honey.
- 134,871 eggs.
- Approximately KSh 10,773,510 in total revenue.

The report also records household income increasing from approximately KSh 150 per day to KSh 750–1,050 per day for participating farmers.

Savings and credit arrangements were established among most supported groups, creating a mechanism for continued investment and resilience beyond direct project financing.

Step 7: Making Conservation Economically Meaningful

KEMFSED PROJECT The Project supported eight community conservation groups, directly benefiting 484 members, including 306 women and 112 youth. Communities planted 657,000 mangrove seedlings and restored 53 acres.

The End of Project Report records an estimated 50% survival rate for planted seedlings. The project also supported conservation-linked enterprises, including mangrove seedling production, crab farming and eco-tourism.

The experience demonstrated that conservation becomes more durable when communities can connect ecosystem stewardship with tangible economic benefits.



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Step 8: Strengthening Community Enterprises and SMEs

KEMFSED PROJECT Five SME-focused CIGs involving 140 beneficiaries received support from the project. The focus enterprises covered fish and fish-product value addition, posho milling, eco-tourism, textiles and dairy processing.

The supported enterprises generated approximately KSh 22.52 million in reported revenue, demonstrating the importance of moving beyond production toward processing, value addition and local enterprise development.

The experience also highlighted the need for continued access to business mentorship, working capital, markets, record keeping and financial management after grant support ends.

Step 9: Investing in Human Capital and Social Infrastructure

KEMFSED PROJECT In an effort to support human capital and social services through education in the County, the project supported students by investing KSh 22.495 million in scholarships for 181 secondary school students as well as certificate, diploma and TVET level going students. The total number of beneficiaries were 49 high-school students, 49 diploma students, 39 certificate trainees and 44 TVET students.

In addition, 10 young people received internship opportunities, providing workplace exposure and mentorship.

The project supported social infrastructure including four ICT laboratories, 21 ECD/primary school classrooms and one medical laboratory. These social infrastructure investments involved 18 community groups and benefited approximately 10,218 members.

Across its capacity-building initiatives, 20,906 beneficiaries were trained, including 8,537 men and 12,369 women, in areas such as financial management, procurement, value-chain development, grievance redress, social accountability, GPS and fish-finder use and other technical areas.

RESULTS OF THE PRACTICE – FROM ASSETS TO CHANGED LIVES

The strongest evidence of KEMFSED project impact is found where project statistics intersect with the experiences of individual beneficiaries.

Dabaso: Where Conservation Became a Business



Figure 3 Dickson Mizinga, a member of the Dabaso Creek Conservation Group, whose crab farming dividends have supported his children's university education and investment in rental houses

In Dabaso, along Mida Creek in Kilifi North, the Dabaso Creek Conservation Group illustrates the potential of integrating conservation with enterprise.

Established in 2000 with 41 members, including 14 women, the group initially focused on

restoring degraded mangroves. It subsequently developed crab fattening as an alternative livelihood.

The enterprise grew from just 10 crab cages to more than 1,000 cages by 2022. In 2024, KEMFSED PROJECT supported the group with an additional 925 cages, substantially expanding its productive capacity.

For Dickson Mizinga, the enterprise provided a new economic pathway after he lost his hotel job.

“In 2023, I received KSh 340,000 in dividends. Last year, it was KSh 350,000. I’ve managed to educate my children up to university and even built rental houses as an alternative source of income.”

Moureen Halima, a teacher and mother of three, similarly used her dividends to acquire land and build a home.



Figure 4 Dabaso Creek Conservation Group's crab farming enterprise grew from just 10 cages to more than 1,000, with KEMFSED PROJECT supporting an additional 925 cages in 2024

The group went further by establishing the Dabaso Crab Shack, a mangrove restaurant offering seafood and canoe experiences. This created an eco-tourism enterprise in which the same ecosystem being conserved became part of the community's economic asset base.

Women also gained greater participation. Caroline Kitu, a mother of seven, describes the change: “Before I joined, women were excluded from such activities. But we pushed for gender consideration, and now we are 14 women members.”

The significance of Dabaso has gone beyond crab production. It has demonstrated that conservation can become economically valuable when communities have ownership, productive assets, technical support and access to enterprise opportunities.

Ihaleni–Kakuluni: From Uncertain Fishing to Integrated Mariculture

The story of Ihaleni–Kakuluni Conservation Group demonstrates another dimension of the model. For generations, fishing had been central to household survival, but declining fish stocks made the traditional livelihood increasingly uncertain.



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Lilian Kahindi remembers: “We used to go to the ocean every day hoping for a good catch, but every year it became harder. Sometimes you could spend the whole day fishing and still come back with almost nothing. It became very difficult to provide for our families.”

Before KEMFSED PROJECT support, the group had attempted to diversify into milkfish farming, but only two of its ponds were operating effectively.

Nicholas Kirima, a group leader, summarized the challenge: “We knew we could not continue depending on the sea alone. Fish stocks were going down, and people were struggling. We needed something sustainable—something we could manage and grow ourselves.”

KEMFSED PROJECT provided a grant of approximately KSh 2.24 million. The investment rehabilitated existing ponds, added two new ponds, expanded water channels, provided milkfish fingerlings and feeds, constructed resting bandas, supplied harvesting equipment and a deep freezer, and provided training in pond management, sampling, monitoring, harvesting and post-harvest handling.

The number of productive ponds increased from two to four. Milkfish production increased by approximately 40–50%, with one pond recording a harvest of 474 kilograms.

The group subsequently integrated crab farming through collaboration with Crabs Alive Limited. Nicholas explains: “Integrating crab farming with milkfish has been a game changer. We no longer put all our hopes on one thing. If one market slows down, we still have another source of income. This project has really changed our lives.”

The group has produced 1,116 kilograms of crabs, generating approximately KSh 464,236 in revenue, while combined milkfish and crab enterprises contributed to a reported 20–30% increase in household incomes.

For Lilian, the change was deeply personal: “Before this project, it was very difficult to get money. The sea was giving us less and less every season. Now I harvest milkfish and crabs, I can pay school fees for my children and even save some money. Life has improved.”

The group grew from 21 direct beneficiaries to 35 members, reflecting growing confidence in integrated mariculture as a livelihood opportunity.

Education: From Scholarship Support to Service

The scholarship programme provides another example of how KEMFSED PROJECT invested in long-term resilience. Athman Salale, a scholarship beneficiary, completed his studies as a Clinical Officer and now serves at Rukem Health Centre.



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“Receiving the scholarship was a life-changing opportunity that enabled me to pursue my studies and achieve my dream of becoming a Clinical Officer. Today, I am proud to serve my community through my work at Rukem Health Centre.”

His story illustrates that the project's human-capital investment extended beyond immediate household support to create skills that can benefit the wider community.

LESSONS LEARNT

KEMFSED PROJECT's experience in Kilifi shows that sustainable development of fisheries-dependent communities requires an integrated combination of productive assets, skills, institutions, markets and environmental stewardship.

What worked well

- Integrated livelihood diversification reduced reliance on a single income source and created complementary opportunities across fisheries, aquaculture, agriculture, livestock, conservation and SMEs.
- Community ownership through CIGs, BMUs and JCMAs strengthened participation, accountability and local responsibility for assets and natural resources.
- Combining productive assets with training and technical support improved the ability of beneficiaries to operate enterprises and use new technologies.
- Conservation-linked enterprises, especially crab farming and eco-tourism in Dabaso, created economic incentives for protecting ecosystems.
- Savings and credit arrangements strengthened groups' capacity to reinvest and respond to future needs.
- Targeted support to women and youth expanded their participation in economic activities and community development.

What did not work sufficiently well

- Increased production was not always matched by reliable markets, value addition, storage and transport, limiting the income potential of some enterprises.
- High operating and maintenance costs, including fuel, electricity, repairs and other inputs, can threaten the sustainability of productive assets after project financing ends.
- Climate variability, drought, disease and changing sea conditions continued to expose fisheries, aquaculture, agriculture and livestock enterprises to risk.
- Some community enterprises require stronger internal systems for record keeping, financial management, benefit sharing and accountability.
- Social infrastructure requires clear maintenance, staffing, equipment and operational arrangements to remain functional after construction.

- Demand for scholarships and internship opportunities exceeded available places, showing that human-capital investments need stronger links with employers and other financing opportunities.

What should be done differently or maintained

- Maintain the integrated model, but build market linkages, maintenance plans, operational financing and post-project technical support into project design from the beginning.
- Move from one-off training to continuous mentorship, extension and business coaching.
- Strengthen climate-risk assessment and adaptation measures before selecting production technologies and sites.
- Maintain community participation and transparent benefit-sharing arrangements while strengthening institutional oversight.
- Use baseline and endline measurements consistently so that production, income, employment and environmental results can be demonstrated clearly.

RECOMMENDATIONS

1. Institutionalize successful KEMFSED PROJECT interventions within County plans, budgets, departmental workplans and relevant national programmes.
2. Establish a sustainable Blue Economy financing mechanism that supports enterprise expansion, working capital, asset replacement and essential operational costs.
3. Strengthen BMUs, JCMAs and fisheries co-management structures through continued training, monitoring, enforcement, data collection and transparent governance.
4. Expand cold-chain, fish handling, processing, storage and value addition, while ensuring clear ownership, maintenance and operating models for facilities and equipment.
5. Scale sustainable offshore fishing, aquaculture and mariculture where market demand, technical feasibility and environmental conditions support viable enterprises.
6. Strengthen county extension services and provide continuous technical backstopping to community enterprises, particularly in fisheries, aquaculture, agriculture and livestock.
7. Build market systems from the start through aggregation, buyer linkages, branding, packaging, value addition, digital marketing, private-sector partnerships and improved transport.
8. Promote climate-smart agriculture and livestock through irrigation, water harvesting, drought-tolerant production, improved breeds, veterinary services and other locally appropriate adaptation measures.
9. Strengthen community enterprise governance, including financial management, record keeping, benefit sharing, asset management and conflict-resolution mechanisms.



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10. Expand women and youth access to productive assets, finance, leadership, training, employment, entrepreneurship and markets, with participation measured by economic outcomes rather than beneficiary numbers alone.
11. Strengthen TVET-to-work pathways by expanding internships, employer partnerships, mentorship and tools-of-trade support for graduates.
12. Link conservation directly to sustainable livelihoods, including eco-tourism, crab farming, mangrove nurseries and other environmentally responsible enterprises.
13. Establish a post-project monitoring and technical-support framework that tracks asset functionality, enterprise profitability, incomes, savings, market access, environmental outcomes and participation of women and youth.
14. Prepare maintenance and operational plans for all community infrastructure before project closure, with identified responsible institutions, financing arrangements and technical support.
15. Strengthen partnerships and resource mobilization with national and county government, private investors, financial institutions, research organizations, development partners, tourism operators and training institutions.
16. Use KEMFSED PROJECT's documented successes as demonstration models for replication, while adapting each intervention to local ecological conditions, market opportunities and community priorities.

Conclusion

The central lesson from KEMFSED PROJECT is that lasting resilience is built when communities are supported to manage natural resources sustainably while developing multiple sources of income. The next phase should therefore focus on converting project-supported assets and skills into durable, locally financed enterprises and institutions.

The model is strongest when community ownership, productive assets, technical skills, climate resilience, conservation, finance, markets and accountable institutions work together.

Further reading:

KEMFSED PROJECT End of Project Report 2026 – County Government of Kilifi.

KEMFSED PROJECT Impact Booklet 2025 – County Government of Kilifi.