



BLUE EMPOWERMENT PROJECT

Endline Evaluation Report

August 2026



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ABBREVIATIONS & ACRONYMS

ACTS	African Centre for Technology Studies
AABS	Association for Agricultural and Blue Economy Studies
BMU	Beach Management Unit
CBO	Community-Based Organization
CIDP	County Integrated Development Plan
SMC	SeaMoss Corporation
EEZ	Exclusive Economic Zone
FGD	Focus Group Discussion
IDRC	International Development Research Centre
IMTA	Integrated Multi-Trophic Aquaculture
KBC	Kenya Broadcasting Corporation
KEMFSED	Kenya Marine Fisheries and Socio-Economic Development Project
KMFRI	Kenya Marine and Fisheries Research Institute
KII	Key Informant Interview
KIRDI	Kenya Industrial Research and Development Institute
KU	Kenyatta University
LORTA	Learning-Oriented Real-Time Impact Assessment
MSC	Most Significant Change
NGO	Non-Governmental Organization
OECD-DAC	Organisation for Economic Co-operation and Development – Development Assistance Committee
SACCO	Savings and Credit Cooperative Organization
SPSS	Statistical Package for the Social Sciences
ToC	Theory of Change
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VSLA	Village Savings and Loan Association
WEAI	Women's Empowerment in Agriculture Index

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EXECUTIVE SUMMARY

Evaluation Purpose and Scope

This endline evaluation assessed the performance, outcomes, and sustainability of the Blue Empowerment Project, implemented in Kwale and Kilifi counties from 2021 to 2026. The project sought to address structural barriers limiting women's participation in Kenya's coastal blue economy through climate-smart Integrated Multi-Trophic Aquaculture (IMTA) for seaweed and fish value chains, value addition, SACCO strengthening, financial literacy, and market linkage support. The evaluation used a mixed-methods design, combining a household survey of 300 respondents with over 15 Key Informant Interviews, 4 Focus Group Discussions, Most Significant Change stories, and secondary document review. Findings are organized around the OECD-DAC evaluation criteria of relevance, coherence, effectiveness, efficiency, impact, and sustainability.

Key Findings

The project was highly relevant to the needs of coastal women, youth, and fisher communities. It addressed a clearly defined structural problem: women's limited access to productive assets, finance, technology, markets, and decision-making spaces in the blue economy. The project's emphasis on seaweed farming, value addition, SACCOs, and nearshore IMTA was appropriate because these activities aligned with spaces where women could realistically participate and build economic agency.

The project was also coherent with national and county priorities. It aligned with Kenya's blue economy agenda and county development priorities on fisheries, aquaculture, seaweed production, women's economic empowerment, and climate-resilient livelihoods. It complemented interventions by the government, NGOs, research institutions, and private-sector actors. However, implementation also revealed coordination gaps, especially around permits, licenses, clearances for wild rabbit fish fingerlings, environmental approvals, and overlapping institutional mandates. These challenges highlight the need for clearer, more harmonized approval pathways for aquaculture and IMTA-related activities.

In terms of effectiveness, the project performed strongly in women's empowerment, capacity building, and institutional development. Women's agency is the project's most significant achievement. About 81% of the respondents reported increased influence in household economic decision-making, and women now occupy significant leadership positions in self-help groups, SACCOs, and business units. The project also achieved strong training reach, with 78.75% of respondents trained, and 86.96% of technology adopters citing Blue Empowerment Programme training as the main driver of adoption.

Value addition was one of the strongest practical outcomes. Training reached 57.21% of respondents, with adult women accounting for 85.47% of value addition trainees. Application was high, with 83.9% of trained respondents always or sometimes applying value addition skills. However, the market system did not develop at the same pace as training. SACCO-facilitated collective sales remain below 5% across production systems, indicating that market linkage support was insufficiently completed.

IMTA adoption remains promising but constrained. Although awareness and knowledge of IMTA increased substantially, actual adoption remained low at 12.37%. This gap reflects capital, equipment, technical, and regulatory barriers rather than lack of interest or awareness. IMTA is on a different adoption trajectory from value addition and requires a more intensive support model.

Overall, the project demonstrated moderate to good efficiency. The project maintained a strong delivery orientation, with most expenditure directed to research, partner implementation, field-based activities, and technical delivery rather than administration. However, efficiency was moderated by under-absorption in some budget categories, uneven partner budget performance, and the absence of beneficiary and adoption denominators in the financial data, which limits full cost-per-beneficiary and cost-per-adopter analysis.

The evaluation also identified important efficiency constraints. Some activities were affected by delayed procurement, delayed business registration, limited follow-up after training, and insufficient early community co-design. In Kwale, pond implementation challenges showed the cost of bypassing participatory design: planned ponds were not fully realized, fingerling transfer faced losses, and community knowledge was not adequately incorporated.

The project generated early impact, especially in women's confidence, leadership, livelihood diversification, financial practices, and participation in blue economy activities. A total of 84.25% of respondents reported increased reliance on blue economy activities since the project began. However, systems-level impact remains incomplete where market structures, aggregator financing, and IMTA infrastructure are not yet fully functional.

Sustainability prospects are mixed but promising. Behavioural changes around value addition, savings, leadership, and business record-keeping appear likely to continue. Some groups are already producing and selling seaweed-based cosmetic products beyond project facilitation. However, sustainability is constrained by weak market linkages, limited working capital for aggregators, incomplete registration of business units, and continued reliance on external technical support for IMTA.

Main Conclusions

Overall, the Blue Empowerment Project made a meaningful contribution to women's empowerment and to inclusive participation in the blue economy in Kwale and Kilifi. Its strongest achievements are in women's agency, leadership, training uptake, SACCO formation, and practical skills for value addition. The project successfully built the foundation for more inclusive participation in the blue economy.

However, the project was less successful in completing the full pathway from training and production to sustainable commercialization. Value addition skills were transferred, but reliable markets were not fully developed. SACCOs were formed, but collective selling remains limited. IMTA knowledge was built, but adoption remains constrained by capital, infrastructure, permits, and technical follow-up.

The most important lesson is that future programming must move beyond training and facilitation toward market system strengthening, aggregator capitalization, shared processing infrastructure, and harmonized institutional support.

Priority Recommendations

1. **Strengthen market systems and aggregator financing:** Provide working capital or blended finance mechanisms to enable aggregators such as SeaMoss Corporation (SMC) to purchase consistently from producers.
2. **Invest in shared processing and aggregation infrastructure:** Establish commercial-scale shared processing facilities that can support equipment access, aggregation, quality control, and income generation.
3. **Differentiate support for value addition and IMTA:** Scale value addition as a lower-barrier enterprise pathway while treating IMTA as a capital-intensive innovation requiring deeper technical and financial support.
4. **Front-load business registration and formalization:** Support SACCOs and business units to complete registration early so they can open bank accounts, sign supply agreements, and engage buyers.

5. **Improve participatory co-design:** Ensure communities and local knowledge holders are involved from the start in technical design, pond siting, stocking, and operational planning.
6. **Sustain and strengthen the two gender-focused advocacy coalitions established under the BE programme:** Continued institutional and technical support to build women's agency, foster networking, and amplify collective voice and action on existing and emerging priorities affecting women within SACCOs.
7. **Harmonize regulatory and permitting processes:** Clarify mandates and approval pathways for aquaculture permits, wild fingerling collection, environmental approvals, cage installation, and IMTA operations.
8. **Complete digital and institutional market linkage tools:** Finalize the marketing portal and strengthen buyer engagement with hotels, processors, retailers, and export-oriented markets.

Project Performance Rating Summary

Evaluation Criterion	Rating	Summary
Relevance	High	Strong alignment with beneficiary needs and gendered livelihood realities
Coherence	High	Aligned with national and county priorities, but regulatory coordination gaps remain
Effectiveness	Moderate-High	Strong empowerment and capacity outcomes; weaker market and IMTA outcomes
Efficiency	Moderate	Good delivery overall, affected by procurement, sequencing, and co-design gaps
Impact	Moderate-High	Strong early changes in agency, confidence, leadership, and livelihoods
Sustainability	Moderate	Behavioural gains likely to continue, but market and financing systems remain weak

1. INTRODUCTION

1.1 Background and Context

Kenya's coastal and marine ecosystem plays a critical role in national socio-economic development, contributing significantly to food and nutrition security, employment, and livelihoods, particularly through fisheries and tourism. Kenya's Indian Ocean Exclusive Economic Zone (EEZ), covering an area of approximately 142,400 km², has an estimated fisheries potential of 150,000–300,000 metric tonnes annually, accounting for about 10% of national fish production (State Department for Blue Economy and Fisheries, 2023). Coastal fisheries, therefore, constitute a central pillar of the country's Blue Economy agenda and offer substantial opportunities for inclusive and sustainable economic growth. Kenya's broader Blue Economy framework encompasses fisheries, aquaculture, maritime transport, coastal tourism, marine renewable energy, and the sustainable management of mangroves and coral reef ecosystems, all of which are particularly significant in the country's coastal counties of Kwale and Kilifi (UNEP & Nairobi Convention Secretariat, 2022). Despite this potential, coastal and marine ecosystems are under increasing pressure from environmental degradation and climate change. These pressures have resulted in declining and increasingly unpredictable fish catches, adversely affecting over 6,500 fishers operating more than 1,800 artisanal fishing vessels across 141 landing sites along Kenya's coast (KEMFSED, 2020). Reduced productivity has weakened livelihoods, heightened vulnerability, and undermined household food and nutrition security in many coastal communities.

Kwale and Kilifi counties exemplify both the promise and the fragility of Kenya's coastal Blue Economy. Kwale County, which records a poverty rate of approximately 71%, is among the most economically marginalised counties in the country, with high youth unemployment and significant dependence on marine and coastal resources for subsistence and income (Chepkoech et al., 2021). The county's coastline supports artisanal fisheries, seaweed farming, mangrove-based livelihoods, and emerging mariculture enterprises, including IMTA activities introduced through projects such as the Blue Empowerment Project (WorldFish & AABS, 2025). Kilifi County, home to approximately 1.5 million people, similarly depends heavily on marine resources and hosts two of Kenya's Marine Protected Areas, including Malindi and Watamu Marine Parks and Reserves, which are central to both biodiversity conservation and coastal tourism (UNDP, 2018). Both counties face compounding environmental threats, including shoreline erosion, ocean acidification, coral bleaching, rising sea levels, and the degradation of mangrove ecosystems that underpin the productivity of nearshore fisheries (Nairobi Convention Secretariat, 2022). The loss of these habitats is critical given that the value of mangrove fisheries in Kenya has been estimated at USD 95 per hectare annually, with more than 85% of coastal fishing activities conducted by artisanal fishers in inshore areas adjacent to mangrove forests (UNEP & Nairobi Convention Secretariat, 2022).

Compounding these challenges are deep-rooted gender disparities. Prevailing cultural norms in fishing communities largely position men in offshore fishing, while women are concentrated in downstream and post-harvest roles such as processing, trading, and marketing. These activities are often undervalued, under-remunerated, and attract limited investment and policy attention. Women continue to face multiple structural barriers, including restricted access to marine resources, insecurity at sea, limited access to technical skills and training, inadequate capital to invest in fishing vessels and post-harvest infrastructure, and discrimination rooted in entrenched hierarchical power relations (FAO, 2020; CGIAR, 2022). Consequently, women's economic contributions remain marginalised despite their central role in fisheries value chains.

Research conducted in Kwale and Kilifi has documented that women's participation in fisheries-related decision-making remains constrained, with studies indicating that nearly 46% of coastal community members feel excluded from resource governance processes, particularly women and low-income groups (KEMFSED, 2023). The impacts of the COVID-19 pandemic and accelerating climate change have further exacerbated these vulnerabilities, intensifying income shocks and food insecurity among fisher households (Béné et al., 2021).

In response to these challenges, the Blue Empowerment Project was developed and implemented in Kilifi and Kwale counties between 2022 and 2026. As the project approached completion, an endline evaluation was conducted, anchored in a rigorous survey and complementary qualitative assessments, to assess project outcomes, impacts, and lessons learned, and to generate actionable recommendations for future programming. The evaluation provides evidence on the extent to which the project achieved its intended objectives relative to the baseline, examines the validity of the project's underlying assumptions and theory of change, assesses the long-term sustainability of interventions beyond the project lifecycle, and informs decisions regarding the potential scale-up or replication of the intervention in similar coastal contexts.

1.2 Blue Empowerment Project Overview

The Blue Empowerment Project, formally titled *"Aquaculture of Seaweeds and Fish: Opportunities for Blue Economic Empowerment and COVID-19 Resilience of Fisher Women in Kenya,"* is a research-for-development initiative funded by the IDRC and implemented by a consortium led by the ACTS, in partnership with Kenya Industrial Research and Development Institute (KIRDI), the Bahari Community Based Organization Network (BCBON), the Kenya Marine and Fisheries Research Institute (KMFRI), Kenyatta University (KU), and Sea Moss Corporation. The project was implemented in Kilifi and Kwale counties along Kenya's coast, with case studies focused on four Beach Management Units (BMUs), Kibuyuni-Kijiweni, Mwazaro, Kibokoni, and Mayungu, selected because seaweed and fish farming initiatives were already ongoing in these areas, providing a foundation for the introduction of more integrated aquaculture systems.

The project was conceived in response to the compounding challenges of environmental degradation, climate change, and the COVID-19 pandemic, which had collectively worsened the livelihoods of artisanal fisher communities and particularly women, along the Kenyan coast. Cultural norms in these communities confine women largely to downstream post-harvest roles such as processing, trading, and marketing, activities that are structurally undervalued and attract limited investment, while also restricting women's access to ocean resources, technical training, capital, and decision-making platforms. The pandemic further deepened these pre-existing inequalities, disproportionately affecting women in their multiple productive, reproductive, and caregiving roles, and contributing to steep declines in business opportunities and household incomes.

The Blue Empowerment project aimed to contribute to the tackling of barriers for the empowerment of fisher women in Kenya's coastal region through the adoption of climate-smart IMTA of seaweeds and fish for improved livelihoods and resilience, based on five objectives:

- To provide state-of-the-art information on levers for equitable and sustainable adoption of fish and seaweed IMTA among coastal fisher communities in Kenya, with a specific focus on Kwale and Kilifi counties.
- To provide options for enabling policies, technology uptake, and governance frameworks for IMTA adoption and women and girl's empowerment in the coastal communities.
- To design, set-up, test and optimize gender transformative fish-seaweeds IMTA solutions for the socioeconomic empowerment, COVID-19, and Climate Change resilience of fisher women.
- To promote knowledge translation, dissemination and learning for IMTA systems upscaling, climate change and COVID-19 response strategies for the local community in Kwale and Kilifi counties.
- To promote inclusive empowerment through the transformative potential of seaweed-fish IMTA and support entrepreneurship in the seaweed-fish value chain (from proposed supplement).

At its core, the project promoted IMTA, specifically the co-cultivation of seaweeds (*Eucheuma denticulatum*) and rabbitfish (*Siganus sutor*), as a low-carbon, climate-smart, and gender-transformative innovation that makes ocean resources more accessible and economically viable for women. In an IMTA system, species with mutually beneficial relationships are farmed together, with seaweeds functioning as biofilters that remove excess nutrients, replenish oxygen, and sequester carbon dioxide, thereby addressing both ecological sustainability and socio-economic resilience simultaneously. The project's theory of change (Annex 1) was based on the hypothesis that if climate-smart, low-carbon IMTA technologies are co-designed, tested, and scaled with coastal women alongside supportive policies, skills development, and market linkages, then socio-economic and gender-based barriers that limit women's access to marine resources can be reduced.

This was expected to enable women to participate meaningfully in fisheries and seaweed value chains as producers, entrepreneurs, and leaders. The project paves way for women-led enterprises, diversified livelihoods, and increased incomes. As a result, these economic gains contribute to strengthening resilience to climate change and COVID-19-related shocks. Ultimately, the evidence generated through this initiative will inform policy, public and private investment, and governance reforms, contributing to a gender-transformative, inclusive, and resilient blue economy in Kenya's coastal regions.

1.2.1. Blue Empowerment Project Work Packages

The Blue Empowerment Project was structured around five interconnected work packages (WPs) to drive gender-transformative change in Kenya's coastal blue economy.

1. WP1: Project Planning and Coordination; ensured seamless multi-stakeholder collaboration, with ACTS as the primary coordinator and key partners like KMFRI providing technical oversight on aquaculture standards.
2. WP2: Baseline Profiling; identified gender-responsive barriers and opportunities via the 2022 gender analysis report; partners included county governments for data access and local NGOs for community surveys.
3. WP3: Socio-Technical and Policy Pathways Mapping, utilized multi-criteria mapping workshops and 2025 policy dialogues; KMFRI contributed research insights, while county departments facilitated multistakeholder engagements.
4. WP4: IMTA Farm Designs and Value Chain Optimization, advanced cage setups at Kijiweni and business models; technical partners like KMFRI handled farm prototyping, with BMUs/SACCOs testing value chains.
5. WP5: Knowledge Translation and Dissemination; produced 27 blogs, 30+ videos, and SACCO manuals; media partners amplified reach via YouTube documentaries and radio podcasts.

Employing a mixed-methods participatory action research design, the project integrated quantitative surveys, qualitative life histories, gendered value chain analyses, rapid technology assessments, multi-criteria mapping, and co-production. Women's empowerment was measured using an adapted Women's Empowerment in Agriculture Index (WEAI), which tracks agency, resource access, and institutional shifts per the Bill & Melinda Gates Foundation framework. Upon completion, it delivered three functional IMTA platforms as training and incubation hubs, women-led seaweed/fish enterprises, and evidence-based policy recommendations for scaling across Kenya's coast and the Western Indian Ocean.

1.2.2. Project Implementation Partnership

African Centre for Technology Studies (ACTS): Established in 1988 as an intergovernmental think tank based in Nairobi, ACTS spearheads policy-oriented research on science, technology, and innovation to advance sustainable development across Africa. Under the Blue Empowerment Project, ACTS coordinated all five work packages, leading baseline studies, value chain mapping, IMTA optimization, and dissemination activities. The organization produced over 86 knowledge outputs, including reports, training sessions, and policy engagement materials.

Kenya Marine and Fisheries Research Institute (KMFRI): Founded in 1979, KMFRI is mandated to conduct research in marine and freshwater fisheries, aquaculture, ecology, and oceanography to support the sustainable growth of the blue economy, enhance food security, and reduce poverty. Within the project, KMFRI provided technical expertise on IMTA systems, seaweed and fish aquaculture, and contributed critical research insights. Its primary role was within Work Packages 3 and 4, focusing on prototyping and generating data to inform policy.

The Kenya Industrial Research and Development Institute (KIRDI) is a national institute undertaking multidisciplinary research and development in industrial and allied technologies. The institute is involved in the implementation of several Blue Economy projects, namely: (1) establishment of a Kibuyuni seaweed processing plant; (2) development of cage aquaculture technology; (3) solar cooling and drying technologies for post-harvest handling of fish; and (4) commercialisation of mariculture of tilapia and rabbitfish.

Kenyatta University (KU): Mombasa Campus offers undergraduate and postgraduate programmes in coastal and marine management. Within the project, the institution was involved in capacity-building activities, including technical training, knowledge dissemination, and strengthening community and stakeholder understanding of sustainable coastal and marine resource management practices.

Sea Moss Corporation (SMC): It is a seaweed production and development company specializing in supplying *Spinosum* seaweed varieties for the extraction of carrageenan, a highly demanded raw material in the pharmaceutical, cleaning, personal care, and food industries. Within the project, the company supported field training and capacity-building for women in seaweed production, handling, and post-harvest management practices. The organization also played a key role in community mobilization for seaweed farming and processing, while supporting efforts to scale sustainable seaweed production and strengthen market-oriented value chains within coastal communities.

Bahari Community-Based Organization Network (BCBON): It is a multidisciplinary, non-religious, non-partisan, and non-profit umbrella membership network comprising groups engaged in a wide range of marine and coastal livelihood activities. Within the project, the organization was involved in mangrove restoration, seaweed farming, fish farming, and gender mainstreaming initiatives. The organization also worked closely with local fishers and coastal communities to pilot and test IMTA systems, while supporting the expansion of sustainable seaweed farming practices and promoting inclusive participation by women and vulnerable groups in the blue economy.

County Governments of Kwale and Kilifi: As devolved units of governance, the county governments oversee key sectors, including fisheries, youth development, gender, and environmental management. Within the project, they facilitated policy dialogues (including those informing 2025 reports), enabled access to data for baseline studies under Work Package 2, hosted training sessions, and supported the integration of project recommendations into county frameworks. County officials, including directors such as Mwangome Shumaa, actively participated in stakeholder interviews and multi-stakeholder forums, particularly contributing to Work Package 3.

1.3 Evaluation Purpose and Objectives

The main purpose of the endline evaluation was to assess outcomes, impacts, lessons, and recommendations for future programming. This was to provide evidence on the project's achievements relative to the baseline, test assumptions, assess sustainability, and inform scale-up or replication. The endline evaluation showcased key learnings to inform the design of future projects and opportunities for scaling up, documented the most significant change narratives, assessed the relevance of interventions to the target groups, evaluated effectiveness across outcome areas, and examined the sustainability prospects of project results and outputs.

The specific objective of the survey was to;

1. Measure the changes in indicators (outcomes, outputs, and, where possible, impact) between baseline and endline for the Project.
2. Assess the extent to which the objectives have been achieved, including both intended and unintended effects.
3. Analyse the factors (enabling/hindering) that contributed to or constrained the achievement of results.
4. Evaluate the sustainability of results (e.g., whether practices, behaviours, and institutional changes are likely to persist).
5. Document lessons learned, good practices, and recommendations for improving future programming in similar contexts.

1.4 Endline Survey Scope

The endline evaluation was conducted between February and April 2026. It focused on Kwale and Kilifi Counties in Kenya's coastal region. These counties were selected as implementation sites for the Blue Empowerment project due to their reliance on fishing and aquaculture livelihoods, the significant presence of women in these sectors, and documented gender inequality in access to resources and economic participation.

1.4.1 Kwale

Kwale County covers approximately 8,500 km² and is in Kenya's coastal region, south of Mombasa. The county lies between latitudes 4°19'S and 4°41'S and longitudes 38°31'E and 39°33'E. The evaluation will focus on:

- Lunga Lunga Sub-county: Population approximately 198,423[1](KNBS, 2019), with artisanal and semi-industrial fishing as primary livelihood.
- Msambweni Sub-county: Population approximately 177,690 (KNBS, 2019), with significant seaweed farming activities[2].

The coastal zone receives bimodal rainfall with the long rains from March to May and short rains from October to November. Annual rainfall ranges from 500-1,200 mm. The region experiences moderate to high temperatures year-round with annual averages around 26°C. Terrain includes coastal plains and some elevated areas, with degraded mangrove forests and coral reef ecosystems. The primary livelihoods are fishing, seaweed farming, tourism, and small-scale agriculture. Population density and economic pressures have resulted in resource degradation and livelihood challenges, particularly for women.

1.4.2 Kilifi

Kilifi County covers approximately 12,500 km² and is located in the coastal region north of Mombasa. The evaluation will focus on:

- Kilifi North Sub-county: Population approximately 178,824[3] (KNBS, 2019), with mixed fishing and seaweed farming activities.
- Kilifi South Sub-county: Population approximately 206,753[4] (KNBS, 2019), with established seaweed farming communities.

Kilifi County experiences climatic patterns similar to those of Kwale, with bimodal rainfall (March-May and October-November) and annual rainfall of 800-1,200 mm at higher elevations and 600-800 mm at lower elevations. The temperature ranges from 24 to 32°C annually. The region has diverse agroecological zones, including highland, midland, and lowland areas. Mangrove ecosystems are more intact in parts of Kilifi compared to Kwale. Primary livelihoods include fishing, seaweed farming, coconut farming, and tourism.

[1] Government of Kenya. (2016). Kwale County: 2016 long rains food security assessment report. ReliefWeb.

<https://reliefweb.int/attachments/c5329ad5-83a0-3d36-838a-418b8080c54b/Kwale%20County%20LRA%202016%20Report.pdf>

[2] 2019 Kenya Population and Housing Census

[3] Kenya National Bureau of Statistics. (2019). 2019 Kenya population and housing census. Volume I: Population by county and sub-county. KNBS. <https://www.knbs.or.ke/download/2019-kenya-population-and-housing-census-volume-i-population-by-county-and-sub-county/>

[4] IBID

2. EVALUATION APPROACH AND METHODOLOGY

2.1 Evaluation Design

2.1.1 Overall Evaluation Framework

The endline evaluation adopted a Learning-Oriented Real-Time Impact Assessment (LORTA) approach, operationalized through a concurrent mixed-methods design that integrates quantitative and qualitative components. This approach recognizes the complexity of gender-transformative and systems-oriented interventions in coastal blue economy settings, where measuring change requires both statistical evidence and deep contextual understanding of how and why outcomes occurred. The LORTA framework emphasizes real-time sense-making, adaptive learning, and participatory engagement alongside rigorous accountability, making it well-suited to a project that simultaneously addresses livelihood change, women's empowerment, institutional strengthening, and climate resilience.

The evaluation is structured around the six OECD-DAC evaluation criteria (Relevance, Coherence, Effectiveness, Efficiency, Impact, and Sustainability) complemented by cross-cutting assessments of gender and social inclusion, and climate and environmental sustainability. This dual framework ensures that findings serve both accountability purposes (for ACTS and IDRC) and forward-looking learning objectives for policymakers, future programme designers, and replication partners.

2.1.2. OECD-DAC Evaluation Criteria[5]

1. Relevance

The evaluation assessed the extent to which the project design, interventions, and Theory of Change aligned with the needs and priorities of beneficiaries (particularly women and youth), coastal communities, and institutional stakeholders. Data collection drew from qualitative methods, including participatory interviews, focus group discussions, and Most Significant Change narratives. The analysis examined responsiveness to evolving contextual factors such as climate variability and market dynamics, as well as alignment with gender equity and inclusion principles. It also considered consistency with national blue economy policies, county development plans, and beneficiary livelihood strategies.

2. Effectiveness

Effectiveness was assessed by measuring the extent to which project objectives and expected outcomes were achieved. Quantitative endline data were compared with baseline values to determine changes across key indicators, including livelihoods, income, food security, empowerment, skills development, IMTA adoption, SACCO performance, and institutional capacity. Qualitative evidence was used to explain how and why results were achieved, test Theory of Change assumptions, and identify intended and unintended outcomes. Findings were disaggregated by gender, age, location, and beneficiary type to assess differential impacts.

[5] <http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>

3. Efficiency

The evaluation examined the efficiency of resource utilization, implementation processes, and delivery mechanisms. It assessed whether outputs and outcomes were achieved in a timely and cost-effective manner, and evaluated the appropriateness of implementation modalities such as training, SACCO strengthening, BMU engagement, and demonstration platforms. Institutional arrangements, coordination mechanisms, and adaptive management practices are reviewed to identify factors influencing efficiency.

4. Impact

The evaluation explored early and emerging signs of transformative change at household, community, and systems levels. It assessed changes in economic resilience, food security, gender relations, social capital, institutional capacity, and environmental practices. Qualitative approaches, including MSC narratives, were used to capture transformative and unintended outcomes not reflected in predefined indicators. The analysis also considered the project's contribution to broader systems change, including strengthened value chains, improved governance of BMUs and SACCOs, and enhanced integration of gender and climate considerations in blue economy programming.

5. Sustainability

Sustainability was assessed by examining the likelihood that project outcomes will be maintained beyond the project period. Key areas of analysis included beneficiary ownership, retention of skills and capacities, economic viability of IMTA and related livelihood activities, functionality of SACCOs and business units, and integration of project approaches into local systems and policies. The evaluation also considered environmental sustainability and the extent to which gender-equitable practices are sustained. Enabling and constraining factors such as access to markets, finance, inputs, and technical support were analysed.

6. Coherence

Where applicable, the evaluation also assesses the extent to which the project aligned and complemented other interventions by government, non-governmental organizations, and development partners. It examined synergies, overlaps, and gaps, and evaluated the degree of harmonization with broader coastal development and blue economy initiatives.

7. Cross-Cutting Analysis

Across all criteria, the evaluation analysed enabling and constraining factors influencing project results, including contextual conditions, implementation approaches, partnerships, and institutional arrangements. Triangulation of quantitative and qualitative data ensured robustness and credibility of findings, supporting a learning-oriented assessment of what worked, for whom, under what conditions, and why.

2.1.3 OECD-DAC Criteria Evaluation Questions

The evaluation was guided by a set of interrelated questions structured around the OECD-DAC criteria and cross-cutting themes of gender, inclusion, and climate resilience.

Table 1: Evaluation Questions, Sub-questions, and Indicators by DAC Criterion

Criterion	Evaluation Question	Sub-questions / Indicators
Relevance	To what extent did the project design and interventions align with the needs, priorities, and contexts of beneficiaries and stakeholders?	• Responsiveness to livelihood needs of women, men, and youth • Alignment with national and county blue economy policies • Adaptation to climate variability, market dynamics, and COVID-19
	To what extent were gender equity, youth inclusion, and disability inclusion integrated throughout implementation?	• Effectiveness of gender-responsive and youth-focused approaches • Inclusion of persons with disabilities • Addressing structural barriers to participation
Effectiveness	To what extent were project objectives and expected outcomes achieved?	• Changes in livelihoods, income, and food security • Adoption of IMTA and improved aquaculture practices • SACCO performance (membership, savings, access to credit) • Changes in skills, knowledge, and capacity
	To what extent did the project contribute to women's empowerment and changes in gender relations?	• Decision-making power over resources and income • Participation in leadership and governance • Changes in time use and workload • Shifts in gender norms
	To what extent did the project strengthen institutional capacity of SACCOs, BMUs, and business units?	• Governance and financial management improvements • BMU functionality and participation • Operational and financial viability of business units • Capacity retention
	What factors enabled or constrained the achievement of outcomes?	• Effectiveness of implementation approaches • Influence of contextual factors (climate, markets, social norms) • Role of partnerships and coordination • Identification of unintended outcomes
Efficiency	To what extent were project resources utilized efficiently?	• Timeliness and budget performance • Cost per beneficiary and adoption rates • Cost-effectiveness of implementation modalities • Efficiency of partnerships and coordination

Criterion	Evaluation Question	Sub-questions / Indicators
Impact	What early or emerging transformative changes are evident?	• Changes in resilience, social cohesion, and environmental practices • Spillover effects to non-participants • Systems-level changes (value chains, governance, policies) • Unintended impacts
Sustainability	To what extent are project outcomes likely to be sustained?	• Continuation of livelihood practices (IMTA, aquaculture, value addition) • Financial and operational viability of SACCOs and business units • Retention and institutionalization of skills • Functionality of market and support systems • Environmental sustainability
	To what extent are institutional systems strengthened for long-term blue economy development?	• Integration into county programming • Independent functioning of BMUs and SACCOs • Institutionalization of gender-responsive approaches • Presence of enabling policies and support structures
Coherence	To what extent did the project align with and complement other initiatives?	• Coordination with government, NGOs, and private sector • Synergies, overlaps, and gaps • Alignment with national and county strategies
Gender & Inclusion	To what extent were gender equity, youth inclusion, and disability inclusion achieved?	• Equity in reach and outcomes • Differences by gender, age, and disability • Address the barriers to women economic empowerment and promote effective BE approaches.
Climate & Environment	To what extent did the project enhance climate resilience and environmental sustainability?	• Household resilience to climate shocks • Environmental sustainability of IMTA and related practices • Climate adaptation and mitigation co-benefits

2.2 Methodology

The evaluation employed both quantitative and qualitative data collection methods to promote stakeholder participation and learning. The study used a mixed-method research design, combining quantitative and qualitative approaches to address each research question. A gender-responsive research design was employed in this study, using multiple case studies to enable in-depth investigation of the units of analysis (individuals and groups) and to facilitate case comparison.

The quantitative component utilized a structured household survey to generate statistically representative estimates of changes in key outcome indicators since baseline, enabling before-and-after comparisons across livelihoods, income, IMTA adoption, SACCO performance, and women's empowerment. The qualitative component comprised of Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and Most Significant Change (MSC) case studies, providing deeper insights into causal pathways, contextual enablers and constraints, unintended outcomes, and stakeholder perspectives that structured surveys alone cannot capture.

Integration of the two strands followed a triangulation and convergence model: quantitative findings established the magnitude and direction of change, while qualitative findings explained the underlying mechanisms, attribution, and lived experiences. Converging evidence strengthened conclusions, while divergences prompted further investigation through targeted follow-up and structured sense-making. This iterative approach, aligned with LORTA principles, supported the generation of actionable learning for future blue economy programming.

2.2.1 Contribution Analysis Approach

Given the absence of a randomized control design and the presence of multiple interventions by different actors in the same geographic areas, the evaluation applied contribution analysis to establish plausible causal links between project activities and observed outcomes. This approach involved: (i) reconstructing the program's Theory of Change; (ii) gathering evidence on whether the ToC causal steps hold; (iii) ruling out alternative explanations; and (iv) assessing the strength of evidence for the project's contribution. Contribution claims are presented with explicit confidence ratings (strong, moderate, or weak) informed by the degree of triangulation across data sources.

2.3 Data Collection Methods

2.3.1 Household Survey (Quantitative)

The household survey was the primary quantitative instrument of the evaluation, designed to measure changes in key outcome indicators relative to the 2022 baseline. The survey instrument was adapted from the baseline questionnaire to ensure direct comparability, with targeted refinements to capture project-specific outcomes including IMTA adoption, SACCO performance, and women's empowerment dimensions aligned to the Women's Empowerment in Agriculture Index (WEAI) framework. The questionnaire covers: household socio-economic characteristics; livelihood diversification and income sources; participation in fisheries, seaweed farming, and IMTA; food and nutrition security; access to productive assets and financial services; women's decision-making and leadership; and climate resilience and coping strategies.

Sample Size Determination

The beneficiary population for the endline survey is estimated at 11,046 individuals across both counties, 4,652 in Kwale (42.1%) and 6,394 in Kilifi (57.9%). Given this population exceeds 10,000, a large-population sample size determination approach was applied using Cochran's formula:

$$\text{Cochran's Formula: } n_0 = Z^2 \cdot p(1-p) / e^2$$

Using $Z = 1.96$ (95% confidence), $p = 0.50$ (conservative), $e = 0.05$ (5% margin of error) $\rightarrow n_0 = 385$

However, the final survey sample was set at $n = 300$ due to logistical feasibility and the relatively defined nature of the beneficiary population, comprising registered SACCO members within four well-defined SACCOs across the two counties. To verify the statistical precision of this sample size, the revised margin of error was calculated as follows:

$$e = Z \times \sqrt{[p(1-p)/n]}$$

$$e = 1.96 \times \sqrt{[(0.5 \times 0.5)/300]}$$

$$e = 1.96 \times 0.02887 = 0.0566$$

Thus, a sample size of 300 provides an estimated margin of error of approximately $\pm 5.7\%$ at the 95% confidence level. This falls within the commonly accepted range for social research, where margins of error of $\pm 5\%$ to $\pm 10\%$ are generally considered acceptable.

The sample allocation is shown in Table 2;

Table 2: Sample Size Distribution by County

County	Sub-Counties Covered	Beneficiary Population	Allocated Sample
Kwale	Lunga Lungu, Msambweni	4,652	148
Kilifi	Kilifi North, Kilifi South	6,394	152
Total	4 Sub-counties	11,046	300

Sampling Strategy

The household survey applied a multi-stage sampling design combining cluster sampling and proportionate stratified random sampling. At Stage 1, Kwale and Kilifi Counties served as the primary geographic clusters, selected purposively as the project's implementation areas. At Stage 2, four SACCOs (two per county), each with more than 200 registered members, formed the beneficiary sampling frame; households were allocated to each SACCO in proportion to their share of the county beneficiary population. At Stage 3, households were selected within each SACCO stratum using systematic random sampling from SACCO membership registers. The household is the unit of analysis, and the respondent was the household head or acting decision-maker, consistent with baseline survey criteria.

2.3.2 Key Informant Interviews

Key Informant Interviews provided in-depth qualitative evidence on institutional processes, contextual factors, programme effectiveness, and sustainability from the perspectives of diverse stakeholders. Respondents were selected using purposive sampling to ensure coverage of all relevant stakeholder categories. The KII's targeted a minimum of 20 key informants across nine stakeholder categories. Each interview was guided by a tailored semi-structured guide aligned to OECD-DAC criteria, with core questions and suggested probing questions. Interviews lasted approximately 45–75 minutes and were audio-recorded with permission for transcription.

Table 3: KII Stakeholder Categories and Target Numbers

Stakeholder Category	Target KIIs
Project Implementation Team (ACTS)	4–5
National and County Government	2
Beach Management Unit (BMU) Leaders	2
SACCO Leaders	2
Self-Help Groups and CBOs	2
Beneficiaries (Women, Youth, IMTA Practitioners, Traders)	2
Technical Partners (KIRDI, KMFRI, Kenyatta University)	4–5
Private Sector (Buyers, Processors, Input Suppliers)	2
Total	20–30

2.3.3 Focus Group Discussions

Focus Group Discussions are conducted to validate and contextualize household survey and KII findings, and to capture collective experiences, social dynamics, and group-level perceptions of project outcomes. FGDs also provide a platform for community members to articulate their own definitions of change and success, directly supporting the LORTA principle of beneficiary-defined notions of impact. A total of 4 FGDs were conducted across the two counties (three per county), comprising four beneficiary FGDs. Participants were selected using purposive sampling to ensure representation of key categories, including women farmers, SACCO-affiliated groups, BMU members, youth, and community members from adjacent non-beneficiary communities.

Table 4: FGD Structure and Composition

FGD Type	County	# FGDs	Participants/Group	Total Participants	Primary Focus
Beneficiary	Kwale	2	10–12	20–24	Livelihoods, empowerment, IMTA, sustainability
Beneficiary	Kilifi	2	10–12	20–24	Livelihoods, empowerment, IMTA, sustainability
Total	Both	4	—	60–72	

2.3.4 Most Significant Change Case Studies

In-depth Most Significant Change narratives were collected to document transformative outcomes and provide nuanced evidence of how project interventions influenced women's livelihoods, agency, and resilience over time. MSC stories were collected purposively from FGDs and KII's. The raw stories were subsequently filtered to 5 report-ready narratives for the main report. Stories were organized across five domains aligned with the project's Theory of Change: Livelihoods (30%); Women's Empowerment (25%); Climate Resilience (20%); Sustainability (15%); and Innovation (10%). Final selection prioritizes stories scoring 4 or higher, with geographic balance across Kwale and Kilifi, at least 50% of stories by women, and corroboration from at least 2 independent data sources.

2.3.5 Secondary Document Review

A comprehensive secondary document review provides the desk-based foundation for the evaluation, informing instrument development, contextual analysis, and assessment of programme logic. Documents reviewed include: the project proposal and supplementary documents; inception report; 2022 baseline survey report; annual technical reports; mini monitoring and evaluation reports; mid-term review findings; work package outputs, training materials, and policy briefs; the project indicator matrix and results framework; and published research on IMTA, seaweed farming, and coastal women's empowerment in Kenya and the Western Indian Ocean region. Secondary data also encompasses national and county government planning documents, including the National Blue Economy Strategy and County Integrated Development Plans, and relevant academic and grey literature on gender in the blue economy and climate resilience.

2.3 Data Collection Methods

2.4.1 Quantitative Analysis

Quantitative data from the endline household survey are cleaned, coded, and analysed using statistical software (SPSS and Stata). Analysis proceeds through the following steps:

- **Descriptive Analysis:** Frequency distributions, means, medians, and standard deviations were computed for all key outcome indicators, disaggregated by sex, age group (youth 18–35; adult 36+), geographic location (county), and SACCO membership.
- **Baseline–Endline Comparison:** Where the same indicators and question wording were used at baseline, direct paired comparisons were conducted to measure net change. Quantitative data collected during fieldwork in Kilifi and Kwale counties were analysed in STATA using both descriptive and inferential statistical techniques.
- **Women's Empowerment Analysis:** Outcomes were assessed using the WEAI framework across five domains: (1) decisions about agricultural/aquacultural production; (2) access to and decision-making over productive resources; (3) control over use of income; (4) leadership and membership in groups; and (5) workload and time use. A composite empowerment score was computed, and the proportion of women adequately empowered (score ≥ 0.80) and the gender parity gap were compared to baseline values.

2.4.2 Qualitative Analysis

Qualitative data from KIIs, FGDs, and MSC case studies were analysed using a framework thematic analysis approach. Transcripts and notes were coded systematically using a pre-defined coding framework derived from the evaluation questions and OECD-DAC criteria, supplemented by emergent codes that capture unanticipated themes. Analysis was conducted using a structured manual coding matrix. Analysis followed four sequential stages: (i) familiarisation; (ii) deductive coding aligned to evaluation questions; (iii) inductive coding for emergent themes; and (iv) thematic synthesis integrating codes into analytical themes supported by direct quotes and evidence.

Contribution analysis was applied as an overarching analytical framework to assess the project's plausible contribution to observed outcomes by mapping evidence against ToC causal steps, assessing the validity of programme assumptions, and systematically ruling out alternative explanations. Outcome harvesting complements thematic analysis by working backward from observed outcomes to identify whether and how the project contributed, particularly for unintended and systems-level changes not reflected in predefined indicators. The Bill and Melinda Gates (BMG) Gender-Transformative Change Model provided an analytical lens across three dimensions: (i) changes in gender norms and attitudes; (ii) shifts in women's decision-making power and agency; and (iii) improvements in women's income and resilience, supporting differentiation between surface-level inclusion and bigger transformative change.

2.4.3 Triangulation and Integration

Triangulation was applied at three levels: (i) method triangulation, convergence of findings across the household survey, KIIs, FGDs, and MSC narratives; (ii) source triangulation, cross-checking accounts across different stakeholder categories; and (iii) data triangulation, comparison of primary data with secondary documents, baseline findings, and project monitoring reports. The evaluation team conducts structured sense-making sessions following field data collection to iteratively integrate findings, identify areas of convergence and divergence, and refine analytical conclusions. Interim findings are shared with the ACTS project team for validation and reflection, in line with the LORTA emphasis on real-time learning.

2.5 Data Quality Assurance

Data quality assurance was embedded across four interrelated stages of the evaluation process: preparation, fieldwork quality control, real-time monitoring, and post-collection validation.

Stage 1 – Preparation: All instruments were pre-tested prior to full deployment. The household survey questionnaire was programmed on KoboToolbox with built-in validation rules, skip logic, range checks, and mandatory field requirements. All enumerators received a day of standardized training covering evaluation objectives, instrument use, interview techniques, ethical protocols, and quality standards.

Stage 2 – Fieldwork Quality Control: A field supervisor was assigned to each data collection team, responsible for daily review of completed questionnaires and ensuring adherence to sampling protocols. A minimum of 10% of all household interviews were backchecked by telephone verification or a revisit within 48 hours. Qualitative interviews were transcribed immediately after data collection.

Stage 3 – Real-Time Monitoring: Daily data submission from KoboToolbox enabled the lead evaluator to monitor response rates, geographic coverage, missing data, and outliers in near real time. Dashboard monitoring flags questionnaires with excessive item non-response or anomalous values for follow-up review and possible re-interview.

Stage 4 – Post-Collection Validation: All quantitative data was subjected to a structured cleaning protocol: duplicate detection and removal, range and consistency checks, outlier treatment, and documentation of all transformations in a cleaning log. Qualitative transcripts were reviewed against audio recordings by a second team member. A 10% inter-rater reliability check was applied to qualitative coding, targeting ≥85% agreement.

2.6 Ethical Considerations

The evaluation was conducted in accordance with established ethical principles for social research, including voluntary participation, informed consent, confidentiality, the do no harm principle, and compliance with data protection requirements. Specific safeguards include:

- **Informed Consent:** All respondents received a clear verbal explanation of the evaluation purpose, data use, confidentiality protections, and their right to decline or withdraw. Consent was documented before any interview or discussion commenced.
- **Confidentiality and Anonymization:** All personally identifiable information (PII) was removed from analytical datasets and reports. Respondent names were replaced with alphanumeric codes. Audio recordings were stored on password-protected devices and deleted after transcription verification.
- **Do No Harm:** Interview guides and facilitation approaches were reviewed to ensure questions do not expose respondents to social, economic, or psychological risk. Sensitive topics were approached with trained facilitation and appropriate referral pathways in place.
- **Research Permitting:** Data collection was conducted under research clearance from the National Commission for Science, Technology and Innovation (NACOSTI), in compliance with Kenya's Science, Technology and Innovation Act.
- **Gender and Inclusion Sensitivity:** Female enumerators were deployed for all women-only FGDs and for household interviews in communities where gender-sensitive protocols require female interviewer presence. Disability-inclusive interview adaptations were made available as required.

2.7 Limitations and Mitigation Measures

The evaluation acknowledges several methodological limitations. Table 2.6 summarises each limitation, its potential effect on findings, and the corresponding mitigation strategy adopted by the evaluation team.

Table 5: Evaluation Limitations and Mitigation Measures

Limitation	Potential Effect on Findings	Mitigation Strategy
No randomized control group	Difficulty attributing observed changes solely to the project	Comparison group sampling (non-beneficiary FGDs and household sub-sample); contribution analysis; difference-in-differences modelling
Self-selection bias	Beneficiaries may be systematically different from non-beneficiaries	Purposive comparison group selection in adjacent communities; statistical controls for observable baseline covariates
Recall bias in a household survey	Inaccurate respondent recall of pre-project conditions	Triangulation with baseline data; cross-reference with monitoring records; objective administrative data where available
Social desirability bias in KIIs/FGDs	Respondents may overstate positive outcomes	Independent enumerators (not project staff); emphasis on honest learning; non-leading question design; anonymous protocols where needed
Survivor bias	Only continuing participants surveyed; dropouts excluded	SACCO registers cross-checked against baseline lists; attempts to re-contact and interview dropout households
Multiple concurrent interventions	Other NGO/government programmes confound attribution	Coherence assessment maps overlapping interventions; contribution analysis accounts for alternative explanations; stakeholder triangulation
Qualitative sampling saturation	Limited KIIs/FGDs may not capture full stakeholder diversity	Purposive diversity in selection (county, gender, age, role); iterative saturation assessment; supplementary phone interviews if needed

3. ENDLINE STUDY FINDINGS

The endline survey covered 300 households across Kwale (49.33%) and Kilifi (50.67%) Counties. Among the 273 fully analysed respondents, 65.57% were female and 34.43% male, confirming that the project successfully centred women as primary beneficiaries. Adults aged 35+ accounted for 75.46%, with 24.54% in the youth bracket (18–35 years).

Table 6: Respondent Profile

Total Households Surveyed	300	100%
Kilifi County	152	50.67%
Kwale County	148	49.33%
Female respondents	179	65.57%
Male respondents	94	34.43%
Adults (35+)	206	75.46%
Youth (18–35)	67	24.54%
SACCO members	157	57.34%
Self-help group members	197	74.06%

A notable equity finding is that 27.01% of respondents are widowed or divorced, predominantly women heading households without male income support. This sub-group represents the project's most economically vulnerable primary beneficiaries and should be tracked separately as an equity indicator in subsequent programming.

3.1. Relevance

To what extent did the project design and interventions align with the needs, priorities, and contexts of beneficiaries and stakeholders?

Relevance assesses the extent to which the intervention's objectives and design respond to beneficiary needs, contextual realities, and evolving priorities. It focuses on whether the project addressed the right problem, for the right people, in the right way, and whether this alignment remains valid over time. The analysis applied four OECD dimensions: (i) responsiveness to beneficiary needs; (ii) sensitivity to context; (iii) quality of design; and (iv) responsiveness over time.

The Blue Empowerment project aimed at contributing to tackling barriers for the empowerment of fisher women in Kenya's coastal region through the adoption of climate- smart integrated multi-trophic aquaculture (IMTA) of seaweeds and fish for improved livelihoods and resilience, based on following our objectives:

- To provide state-of-the-art information on levers for equitable and sustainable adoption of fish seaweeds IMTA among coastal fisher communities in Kenya, with a specific focus on Kwale and Kilifi counties.
- To provide options for enabling policies, technology uptake, and governance frameworks for IMTA adoption and women and girls' empowerment in the coastal communities.
- To design, set up, test and optimize gender transformative fish-seaweeds IMTA solutions for the socioeconomic empowerment, COVID-19, and Climate Change resilience of fisher women.

- To promote knowledge translation, dissemination and learning for IMTA systems upscaling, climate change and COVID-19 response strategies for the local community in Kwale and Kilifi counties.
- To optimise market linkages and business incubation for value addition, post-harvest management, and growth of IMTA-related businesses to promote economic independence among fisherwomen.
- To explore and catalyse investment readiness and models for aggregation that can interface with blue sector innovative financing mechanisms.
- To broaden, deepen, and strengthen capacity building to enhance women's agencies, partnerships, and linkages in the Blue-Green Nexus and national dialogues and advocacy efforts.

The survey findings indicated that the project addressed a real, persistent, and structurally embedded development problem: the exclusion of coastal women from productive blue economy assets, decision-making spaces, finance, technology, and market systems. The project's combined focus on climate-smart IMTA, seaweed farming, value addition, SACCO formation, market linkages, and women's agency was well justified by this diagnosis. The project did not impose external problems on communities; it responded to real, lived constraints within the coastal region.

3.1.1 Response to Beneficiary Needs

The project's Theory of Change rested on the premise that women in coastal Kenya face systemic exclusion from productive assets, limiting participation in high-value blue economy activities. The endline survey provides a validation of this premise. Access to coastal resources is near-universal: 95.97% of respondents reported access to ocean and coastal ecosystems, and 85.71% could reach their primary fishing or farming site within one hour. These figures confirm that the barrier women face is not physical proximity to the resource; it is unequal ability to use those resources productively and profitably.

Table 7: Beneficiary Access to Coastal Resources

Access to Coastal Resources	Respondents	Percent (%)
Yes — have access to ocean/coastal resources	262	95.97
No — do not have access	11	4.03
Reach site in less than 15 minutes	58	23.02
Reach the site in 15–30 minutes	79	31.35
Reach the site in 30–60 minutes	79	31.35
Reach the site in more than 1 hour	36	14.29

The gendered asset ownership findings illustrated the nature of that constraint precisely measurable. Women reported 0% individual ownership of outboard engines and fishing boats, the ocean-going, capital-intensive assets that generate the highest returns in coastal fisheries. Individual female ownership of fish cages and ponds stands at just 1.11%. By contrast, women hold significantly higher individual ownership of seaweed farming lines (34.33%) and processing equipment (30%), the lower-capital, nearshore, and post-harvest assets directly supported by the project. The full asset ownership table 8 presents this structural exclusion in full:

Table 8: Beneficiary Productive Asset

Productive Asset	HHs Own (%)	Joint Control (%)	Male Only (%)	Female Only (%)
Outboard engine	10.86	93.1	6.9	0
Fish cage/pond	34.35	98.89	—	1.11
Fishing boat	22.68	80	20	0
Fishing gear	34.23	72.73	23.86	3.41
Seaweed farming lines	25.57	57.72	8.9	34.33
Processing equipment	15.33	65	5	30
Cooking gas	8.27	50	9.09	40.91

This pattern is consistent with the baseline findings, which showed women largely confined to low-capital, nearshore roles with limited access to finance, assets, and decision-making structures. Crucially, 44.69% of households acquired new assets during the project period, evidence of progress in asset accumulation including fishing boats, seaweed farming lines, and fishing gear. However, these gains are concentrated in project-supported activities, confirming that broader structural inequalities in high-value asset ownership persist and require deliberate additional intervention.

The project participants interviewed explained the social mechanisms through which asset exclusion is enforced and reproduced. FGD participants across all four sites describe a baseline condition in which women's exclusion from ocean-going activities was not experienced as formal prohibition but as a deeply internalized social norm, enforced through household dynamics, community expectations, and cultural authority:

"Women were behind, and they didn't believe in themselves. They feared their husbands first and men in the community. There was harassment towards the women. The culture positioned women as those who didn't know much and can't ride a boat."

— Adult Female Respondent, FGD, Kwale

"Initially, before we started joining groups, women had no voice, no freedom, not because of fear, but to avoid disagreements with the man of the house."

— Female respondent, KII, Kilifi North

"Women were not allowed to touch fishing traps or go to the ocean."

— Kilifi North SACCO FGD

The interviews describe the cultural architecture of gendered restriction that was operative in the blue empowerment project implementation sites. Zero percent female ownership of fishing boats is the measurable residue of a norm that says women do not belong on the water. The qualitative evidence surfaces how that norm operates socially; the quantitative data confirms how thoroughly it has structured the asset landscape.

The project design demonstrates a high degree of relevance by aligning its interventions with existing gender dynamics, livelihood realities, and entry points within coastal communities. In particular, the project strategically prioritized seaweed farming and value addition as initial intervention areas, domains where women already had relatively higher levels of access, participation, and ownership. By anchoring interventions in these accessible and culturally accepted spaces, the project engaged the gender system at a point where change was both feasible and sustainable.

This design choice also reflects a deliberate and context-responsive approach rather than a compromise. Interventions that target highly contested domains (e.g., ownership and control of fishing vessels) without first addressing underlying structural and social barriers are less likely to gain traction or be sustained. In contrast, the project adopted a phased pathway to transformation by first strengthening women's economic agency, skills, and confidence within familiar value chains, and then leveraging these gains to expand their participation into higher-value and traditionally male-dominated segments of the blue economy.

By building on existing capacities and gradually challenging restrictive norms, the project enhanced its relevance to beneficiary needs while increasing the likelihood of meaningful and sustained gender transformation. This approach is consistent with best practices in gender-responsive programming, which emphasize incremental change, local ownership, and alignment with socio-cultural contexts as key drivers of impact.

3.1.2 Sensitivity to Context

Relevance requires not only identifying the right problems, but also accurately diagnosing the underlying barriers that constrain adoption and livelihood improvement. The endline survey data confirm that the project's multi-component design was well aligned with the actual constraint profile faced by communities, particularly in relation to IMTA adoption and broader blue economy livelihoods.

Table 9: Barrier to IMTA Adoption and Livelihood Development

Barrier to IMTA Adoption and Livelihood Development	Respondents (%)	Project Response
Climate and weather variability	71	Climate-smart IMTA design; deepwater placement
Lack of inputs (seed, equipment)	59	Input supply, fingerlings, seaweed seeds
Pest and disease	37	Water quality monitoring; species diversification
Inadequate skills / knowledge gap	37	Multi-domain training programme
Transport and logistics	33	Fish Transport Unit; market linkage support
Limited market access	25	SACCO market networks; aggregator partnerships
Low prices	25	Value addition; collective sales
Lack of capital	22	SACCO formation; BEF investment readiness
Theft and insecurity	15	Community-based monitoring
Gender discrimination	10	Gender-transformative training; women's leadership

The data revealed a clear alignment between the barriers identified by communities and the project's interventions. Climate variability (71%) was addressed through IMTA's deepwater design, which reduces exposure to environmental shocks. Key constraints, such as lack of inputs (59%) and knowledge gaps (37%), were addressed through input provision and training, while lack of capital (22%) justified SACCO formation. Challenges related to markets and pricing further support the focus on value addition and market linkages.

3.1.3 Quality of Design: Working with Existing Structures

Relevance requires not only identifying the right problem but also designing the response to be calibrated to the institutional, geographic, and cultural realities of the operating context. The endline data confirms that the project's design quality was strong on three core indicators, while the qualitative evidence surfaces one significant design weakness, the community co-design gap, which the survey captures only consequently, not as a cause.

The first design quality indicator is beneficiary targeting. The 65.57% female respondent majority in the survey confirms that the project's use of SACCO membership registers as its sampling frame successfully centred women as the primary beneficiary group. This is not a given: many projects that aim at women end up with mixed or male-dominated beneficiary populations because targeting mechanisms are insufficiently specific. The SACCO-register approach worked.

The second indicator is institutional alignment. 74.06% of respondents are self-help group members, a near-universal participation rate that confirms the project was built on, rather than bypassing, the existing organizational infrastructure of coastal communities. These self-help groups are legally registered entities operating under the Ministry of Gender and Affirmative Action within the Socio-Economic Directorate, giving them a formal institutional standing beyond informal community structures. Self-help groups have social cohesion, norms of mutual accountability, and women's leadership that formal external structures rarely replicate. By anchoring delivery through these groups, the project inherited their social capital and strengthened their institutional capacity simultaneously.

Table 10: Design Quality Indicators

Design Quality Indicator	Survey Finding (%)	Interpretation
Female respondent majority	65.57	Targeting the mechanism correctly centred women
Self-help group membership	74.06 (75% female)	Built on existing institutions, not parallel structures
Inshore fishing ground access	64.34	IMTA technology matched to where women already operate
New assets acquired (3 years)	44.69	Asset accumulation occurring through project-aligned activities
SACCO membership	57.34 (69.66% female)	Financial inclusion mechanism centred on women

The third indicator is geographic and technological fit. Women primarily access inshore fishing grounds (64.34%) rather than deep-sea sites (34.5%). The IMTA model was designed for nearshore coastal waters, exactly where women operate. This spatial alignment is an indicator of design quality that is often overlooked in evaluations that focus on social targeting and miss the technology-geography fit. A project that had designed an IMTA model requiring deep-sea access would have been technically sound but spatially irrelevant to its target population.

The most significant design quality gap identified by the qualitative strand is the failure of community co-design in the pond fish farming component in Kwale County. FGDs provided the most specific and consequential account in the entire evaluation.

"If communities were engaged from the start, they would have supported in establishing them and running the ponds. Technical and indigenous knowledge work well together to achieve the BE project's objectives."

— Adult Female Respondent, SACCO FGD, Kwale

"At the point of fingerlings, I was expecting a conversation between us on the ground and the project on how to conduct the whole activity. When introducing the fingerlings to the pond, that conversation was not done. It has then happened that we've faced challenges and some fish have not survived... there are steps that were missed like the fingerlings transfer from the wild to the pond."

— Adult Male Respondent, SACCO FGD

"When the project started, the field groups were told that the project have dug 3 ponds. But as of now, there's only one pond. I don't know what problems caused this."

— Adult Female Respondent, SACCO FGD

"The advice of the locals who have indigenous knowledge was not valued. Community involvement was not adequate."

— Respondent, SACCO FGD

The FGDs described the same failure from a different angle: the engineer's design was made without community input; the fingerling transfer was done without the knowledge exchange that would have prevented mortality; the expected three ponds became one; and indigenous knowledge from the locals who live alongside these water bodies was not incorporated. The survey captures the economic consequence: fish farming operating at a mean net loss of 4,430 per cycle, with mean costs of 120,548, far exceeding the mean revenue of 11,679. The qualitative evidence identifies the cause: a design process failure, not a technology failure.

This distinction is analytically critical for Phase 2. It means the fishpond technology itself is not irrelevant; it means the implementation process was poorly designed. Returning to pond farming with a co-design process that incorporates community and indigenous knowledge from the outset could produce fundamentally different results.

3.1.4 Responsiveness Over Time: COVID-19 Recovery and Climate Adaptation

Relevance is not only a baseline judgment; it must be maintained as conditions change. The project was conceived in part as a COVID-19 livelihood resilience response, in a context where pandemic-related disruptions had amplified the pre-existing vulnerability of coastal fishing households. At endline, 84.25% of respondents report increased reliance on blue economy activities compared to before the project, a behavioural shift that is most significant in the context of post-pandemic livelihood recovery. This is not simply a technology adoption figure; it is evidence that the project helped communities rebuild and reorient their livelihoods around blue economy activities during a period of systemic disruption.

Table 11: Reliance on Blue Economy Since the Start of the Project

Reliance on Blue Economy Since Project Start	Respondents	Percent (%)
Much more reliant	67	24.54
Somewhat more reliant	163	59.71
About the same	36	13.19
Somewhat less reliant	5	1.83
Much less reliant	2	0.73

The technology adoption profile confirms that the project's intervention menu remained relevant across the endline period. Business record-keeping (55.38%) and value addition (45.16%) recorded the highest adoption rates, reflecting strong uptake of practical, low-capital interventions that deliver immediate returns and are accessible to women across different income levels. Fish cage culture (33.87%) improved post-harvest practices (30.65%), and mobile-based market information (28.49%) follow. The technology adoption data show a progression from foundational (record-keeping, market information) through production (cage culture, seaweed techniques) to the integrated system (IMTA at 12.37%), forming a coherent adoption ladder that the project's design supported, even if the top rung remains only partially reached.

Table 12: Technologies and Practices Adopted

Technologies and Practices Adopted	Respondents	Percent (%)
Business record-keeping	103	55.38
Value addition (seaweed/fish processing)	84	45.16
Fish cage culture	63	33.87
Improved post-harvest practices	57	30.65
Mobile-based market information	53	28.49
Fish Transport Unit	43	23.12
Improved seaweed farming techniques	42	22.58
IMTA (integrated system)	23	12.37

The adoption motivation data is equally revealing about the project's continued relevance. Of those who adopted technologies, 86.96% cite BE project training as the primary catalyst, confirming that the project's delivery mechanism remained the dominant pathway for behaviour change throughout the project cycle. Income improvement (63.59%) and food security (51.63%) are the primary livelihood motivations, validating the project's dual focus on economic and food security outcomes. County government support (28.26%) and SACCO group encouragement (22.83%) indicate that both public and community-level institutions are actively reinforcing the project's relevance, shifting from passive implementation roles to more engaged and supportive actors within the system.

Table 13: Motivation for Technology Adoption

Motivation for Technology Adoption	Respondents	Percent (%)
Training from the BE project	160	86.96
To increase income	117	63.59
To improve food security	95	51.63
County government support	52	28.26
SACCO group encouragement	42	22.83
To adapt to climate change	30	16.3
Seeing the success of peers	26	14.13
Other (private sector, KEMSFED, Plan International)	7	3.8

Although climate adaptation is cited by a smaller proportion of respondents (16.30%) than income and food security drivers, it remains a significant rather than a marginal finding. It signals an emerging shift among coastal communities, where technology adoption is increasingly understood not only as an economic decision but as a necessary response to environmental change. Qualitative evidence provides important context for this trend, indicating that women are not adopting climate-smart practices solely because of training, but because they are directly experiencing the impacts of climate change on their livelihoods and the surrounding ecological systems.

“Before I did my seaweed farming close to the shore. With climate change, the seaweed is not doing well in shallow waters, now I moved the farm deeper in the water. I don't fear the water anymore now.”

— Adult Female Respondent, Jitihada SACCO FGD, Kwale

This testimony highlights two interrelated dimensions of relevance. The first is technical: shallow-water seaweed farming is becoming increasingly unviable due to rising temperatures, necessitating a shift to deep-water farming as an adaptive strategy. This transition requires moving further offshore and navigating cultural restrictions that have traditionally limited women's presence on the water. The second dimension is social: the statement, *“I don't fear the water anymore,”* reflects a significant shift in cultural norms. It captures how ecological pressures are driving women to cross previously restrictive boundaries. In this context, the project's relevance lies not only in providing technical skills for deep-water farming, but also in building the confidence and agency needed for women to engage safely and productively in these new spaces.

The 20.98% who received climate adaptation training represent a relatively modest reach for a project with climate resilience as a central design principle. Qualitative evidence from the project team confirms that climate adaptation was a strong design-level commitment that was partially crowded out by other implementation priorities. This is an area where the gap between design relevance (high) and delivery reach (20.98%) is most apparent, and where Phase 2 should invest explicitly.

3.2 Coherence

To what extent did the project align with and complement other initiatives? How well does the intervention fit?

The Blue Empowerment Project demonstrated strong coherence with national and county blue economy priorities, particularly around sustainable aquaculture, fisheries, women's economic empowerment, value addition, and climate-resilient livelihoods. Kenya's new National Blue Economy Strategy 2025–2030 is organized around themes including sustainable fisheries, aquaculture, and aquatic ecosystems, which align closely with the project's focus on IMTA, seaweed, fish farming, and sustainable coastal livelihoods.

At the county level, the project complemented the priorities of Kilifi and Kwale in fisheries, aquaculture, seaweed, and community livelihoods. The BE project was reported to be well anchored in Kenya's National Blue Economy Strategy 2025–2030. A draft Aquaculture policy, enriched through policy dialogues in Kwale and Kilifi counties, emphasized the sustainable utilization of aquatic resources. At the county level, the project was also seen as aligning with County Integrated Development Plans, which emphasize fisheries, aquaculture, and seaweed as livelihood sectors.

“The county is not having a specific blue economy strategy... but they have development plan. This is the county integrated development plans, that over the years have really emphasised on fisheries and the seaweed sector... So this aligned very well with the county development plans of improving the fisheries, catch fisheries, aquaculture, and also seaweed...”

— Implementing Partner

Coordination with government was evident but uneven. Kenya Fisheries Services reported that county staff were involved and that BE improved communication between fisheries officers, BMUs, and communities, though they recommended stronger reporting, stakeholder mapping, and co-design in the future. Kilifi County also reported that BE built on existing efforts by KEMFRI, Jumuia ya Pwani, Pwani University, Kenya Marine Fisheries and Socio-Economic Development Project (KEMSFED), and women-focused initiatives, while contributing training, financial literacy, value addition, and cooperative models.

The project also identified synergies with NGOs and development actors, including Plan International, Nature Conservancy, Coastal and Marine Resource Development (COMRED), Mission Inclusion, WorldFish, and Village Savings and Loan Association (VSLA) initiatives. Beneficiaries generally reported complementarity rather than duplication, especially where other actors focused on seaweed, gender justice, mangrove conservation, training, or grants, while BE added IMTA, SACCO strengthening, financial literacy, and value addition. However, some coherence gaps remain. Community respondents felt local knowledge was not always adequately incorporated in pond design and implementation, indicating a need for stronger participatory planning and co-creation. Overall, BE was coherent and complementary, but future programming should improve joint planning, reporting, benchmarking, and coordination across government, NGOs, research institutions, and private-sector buyers.

The BE Project also demonstrated strong coherence with national and county-level blue economy priorities, as well as with ongoing interventions by government, NGOs, research institutions, and private-sector actors. The project's focus on IMTA, seaweed and fish value chains, women-led SACCOs, financial literacy, value addition, and climate-resilient livelihoods was well aligned with Kenya's broader blue economy agenda, which emphasizes sustainable use of marine resources, aquaculture development, inclusive growth, and coastal livelihood diversification. This is also consistent with broader coastal development priorities that promote marine spatial planning, sustainable resource use, and coordinated blue economy governance. The following evidence from the qualitative interviews confirms this alignment;

"The project again also was well anchored in the Blue Economy Strategy of the country... it ties down to the current Kenya National Blue Economy Strategy 2025–2030. That is very clear on the thematic areas of natural resource, sustainable utilisation of aquatic resources... inside there, one of the thematic areas of the blue economy is the issue of circularity as a way of ensuring sustainability. So the project leveraged IMTA, which is Integrated Multi-Trophic Aquaculture, which is known to be an ecologically sustainable innovation in the sense that it enhances circularity by the culture of several species at different trophic levels... So this is a very, very relevant project in sustainable utilisation of aquaculture resources."

— Implementing Partner

"Under the blue economy strategy is also the issue of shared prosperity, which means you don't leave the people behind... in this project, we brought the sea or the blue resources closer to the people... for you to go deep sea fishing, you need some capital... So the IMTA platform brought the sea closer to the people... and also it was gender transformative. It deliberately targeted women and the youth for involvement on the platform."

— Implementing Partner

At the county level, the project complemented existing development priorities in Kilifi and Kwale related to fisheries, aquaculture, seaweed production, cooperative development, and women's economic empowerment. Kilifi County officials reported that the initiative aligned with the county's goals because it empowered citizens and helped groups improve financial management, bookkeeping, participation in aquaculture, and women's leadership. The project also built on existing government and institutional efforts by actors such as KMFRI, Jumuia ya Pwani, Pwani University, and KEMSFED rather than operating in isolation. Coordination with government was generally positive, though not uniformly strong across all stages. Kenya Fisheries Services (KeFS) confirmed that the project aligned with fisheries policies and improved coordination of information and communication between fisheries officers, BMUs, and fisher communities. However, the same respondent noted that the government was not sufficiently involved from the beginning and recommended stronger co-design, stakeholder mapping, and reporting in future programming.

The project also complemented NGO and development partner interventions. Community respondents cited support from Plan International, Nature Conservancy, COMRED, VSLA initiatives, and other actors working on seaweed farming, gender justice, mangrove conservation, and coastal livelihoods. Rather than creating major duplication, beneficiaries generally perceived these interventions as mutually reinforcing. For example, one FGD noted that Plan International and Nature Conservancy “*complement because [they] still focus on sustainable use of coastal resources to improve livelihoods and income.*”

Despite this overall coherence, several gaps were identified. First, community participation in technical design was not always adequate, particularly around pond construction and fish stocking. FGD participants emphasized that indigenous and technical knowledge should have been combined more deliberately, noting that “working together would have made the pond successful” and that future projects should take feedback from those on the ground. Second, some county stakeholders were brought in midway rather than at the planning stage, limiting early harmonization. Third, while overlaps with other initiatives were not viewed as problematic, coordination could be improved through joint work planning, clearer reporting, shared learning platforms, and structured referrals between government, NGOs, SACCOs, BMUs, and private-sector buyers.

While the project was broadly aligned with Kenya’s blue economy priorities, implementation revealed important regulatory and mandate-coordination challenges, especially around permits, licenses, and clearances for IMTA activities. Project partners reported that stocking rabbit fish required permits because the fingerlings were harvested from the wild. However, obtaining these approvals was complicated by unclear and sometimes overlapping mandates among government institutions.

“There was a lot of... bottlenecks, including... the issue of permits from the government entities... you are required... to have the permit to stock the rabbit fish, which the fingerlings were brought from the wild. So you need that permit before you stock.”

— Implementing Partner

The same respondent further noted that permits and approvals affected not only fish stocking but also installation and operation of the IMTA system:

“Before you install that thing, first of all, they had to do an environmental impact assessment... trying to stock the fish now, the permits also, they’re supposed to be there... there was like conflicting mandates by different government agencies.”

— Implementing Partner

This points to a broader coherence issue: the blue economy involves multiple authorities, including fisheries, environment, county governments, BMUs, and national agencies. Recent public reporting also shows ongoing disputes between national and county actors over fisheries licensing mandates in Kenya.

Overall, the project was substantially coherent with Kenya’s national and county blue economy priorities and broadly complementary to ongoing government, NGO, research, and private-sector initiatives. Its strongest contribution was in filling practical gaps around women’s participation, community-level aquaculture, SACCO formation, financial literacy, value addition, and awareness of IMTA. However, future blue economy programming should strengthen co-design, deepen county and national government engagement from inception, and formalize coordination mechanisms to reduce fragmentation and improve sustainability. For future programming, it should also harmonize mandates, clarify approval pathways, and establish a one-stop coordination mechanism for aquaculture-related permits, wild seed/fingerling collection, environmental approvals, cage installation, and community-level IMTA operations. This would reduce delays, improve compliance, and support scaling of IMTA and other blue economy innovations.

Coordination with government was evident but uneven. Kenya Fisheries Services reported that county staff were involved and that BE improved communication between fisheries officers, BMUs, and communities, though they recommended stronger reporting, stakeholder mapping, and co-design in the future. Kilifi County also reported that BE built on existing efforts by KEMFRI, Jumuia ya Pwani, Pwani University, Kenya Marine Fisheries and Socio-Economic Development Project (KEMSFED), and women-focused initiatives, while contributing training, financial literacy, value addition, and cooperative models.

The project also identified synergies with NGOs and development actors, including Plan International, Nature Conservancy, Coastal and Marine Resource Development (COMRED), Mission Inclusion, WorldFish, and Village Savings and Loan Association (VSLA) initiatives. Beneficiaries generally reported complementarity rather than duplication, especially where other actors focused on seaweed, gender justice, mangrove conservation, training, or grants, while BE added IMTA, SACCO strengthening, financial literacy, and value addition. However, some coherence gaps remain. Community respondents felt local knowledge was not always adequately incorporated in pond design and implementation, indicating a need for stronger participatory planning and co-creation. Overall, BE was coherent and complementary, but future programming should improve joint planning, reporting, benchmarking, and coordination across government, NGOs, research institutions, and private-sector buyers.

The BE Project also demonstrated strong coherence with national and county-level blue economy priorities, as well as with ongoing interventions by government, NGOs, research institutions, and private-sector actors. The project's focus on IMTA, seaweed and fish value chains, women-led SACCOs, financial literacy, value addition, and climate-resilient livelihoods was well aligned with Kenya's broader blue economy agenda, which emphasizes sustainable use of marine resources, aquaculture development, inclusive growth, and coastal livelihood diversification. This is also consistent with broader coastal development priorities that promote marine spatial planning, sustainable resource use, and coordinated blue economy governance. The following evidence from the qualitative interviews confirms this alignment;

3.3. Effectiveness

1. To what extent were project objectives and expected outcomes achieved?
2. To what extent did the project contribute to women's empowerment and changes in gender relations?

Effectiveness was assessed across two levels: output achievement, what was delivered, and outcome achievement, what changed as a result. The evidence reveals strong performance across foundational outputs, training reach, SACCO formation, institutional capacity, and transformation outcomes in women's agency, while highlighting a structural IMTA adoption gap that is not a training failure but a capital access failure.

Table 14: Effectiveness Dimension Outcomes

Effectiveness Dimension	Quantitative Signal	Evidence Level
Women's agency and leadership	81.32% more household influence; 75–100% female leadership in groups	STRONG
Capacity building reach	78.75% trained; 86.96% adopters cite BE training as primary driver	STRONG
SACCO formation	57.34% members; 69.66% female; savings access 58.82%	STRONG (formation); MODERATE (operations)
Income and livelihoods	73.26% better income; 44.69% gained new assets	MODERATE-STRONG
IMTA technology adoption	89.61% basic knowledge; 12.37% adopted — 30pp gap	STRONG (knowledge); MODERATE (adoption)
Value addition and market linkages	45.16% adopted VA; SACCO collective sales <5%	MODERATE
Policy and advocacy	TWG membership, county gender and cooperative policy contributions	MODERATE-STRONG

3.3.1 Women's Agency Transformation: The Project's Defining Achievement

The Blue Empowerment Project's most significant and defining achievement lies in its contribution to transforming women's agency across household, community, and institutional levels. The evidence indicates that the project not only met, but also substantively advanced its objective of strengthening women's participation, voice, and leadership within the blue economy. Quantitative findings demonstrate a strong shift in women's influence over household economic decision-making. Overall, 81.32% of respondents reported increased influence, with 60.07% indicating "somewhat more" and 21.25% reporting "much more." This reflects a meaningful transition from historically constrained decision-making roles toward more active and recognized participation in household economic processes.

These gains are reinforced by substantial changes in leadership representation. Women now account for 75% of leadership positions in self-help groups, 69.66% in SACCO structures, and 66.67% within BE business units, with an additional 4.04% represented by female youth. In some contexts, this transformation is even more pronounced: government-validated data indicates that women hold 100% of leadership positions in Kilifi South groups and 80% in Kilifi North. These are not marginal gains; they represent a structural shift from pre-project conditions, where leadership and decision-making spaces were overwhelmingly male dominated. The increased reliance on blue economy activities, reported by 84.25% of respondents, further reflects women's growing agency in livelihood choices and economic engagement. This shift suggests not only participation, but also confidence and ownership in economic activities that were previously inaccessible or constrained.

Table 15: Empowerment Outcome Indicator

Empowerment Outcome Indicator	Survey / KII Finding (%)
Women with more household economic decision influence	81.32
Much more influence (strong shift)	21.25
Female share — self-help group leadership	75
Female share — SACCO membership	69.66
Female share — BE business units	66.67 + 4.04 female youth
Women in leadership — Kilifi South groups (govt-confirmed)	100
Women in leadership — Kilifi North groups (govt-confirmed)	80
Increased reliance on blue economy activities	84.25

The qualitative evidence from all three evidence streams confirms the depth, specificity, and durability of the observed changes in women's agency. From the beneficiaries' perspective, women describe a transformation that is simultaneously psychological, relational, and physical. Prior to the project, women did not speak because they were formally restricted, but because silence had become internalized through generations of social conditioning. The transformation observed is therefore not simply the removal of visible barriers, but the reconstruction of self-belief, which represents a deeper and more durable form of change.

"Women were behind, and they didn't believe in themselves. They feared their husbands first and men in the community. There was harassment towards the women. The culture positioned women as those who didn't know much and can't ride a boat... but now I ride the boat... yes that coxswain. We now have a voice, we now don't fear men — we respect them. If it gets to a tough point, I tell my husband that we are the same, he brings flour, I bring the stew."

— Adult Female Respondent, FGD, Kwale

This testimony illustrates multiple, layered dimensions of change. The findings highlight distinct but interconnected transformations: physical access (riding the boat), psychological change (loss of fear), relational renegotiation (mutual respect replacing deference), and an emerging claim to economic equality within the household. These layers are cumulative. Women who begin to earn income gain confidence; this confidence enables them to renegotiate household dynamics, and this renegotiation, in turn, allows them to access physical and economic spaces previously closed to the, while also challenging the social norms that hinder their access and participation.

"I was fearful. I didn't know my capabilities fully. Now I am in a leadership position as a secretary of SACCO. I say what I have in mind. I see that I am now empowered."

— Adult Female Respondent, FGD

"I am now active... before I couldn't stand before people and I didn't know my rights. Now I know and if I see any injustice against my fellow woman I am able to stand up for her confidently."

— Adult Female Respondent, FGD

Beyond individual empowerment, the findings also demonstrate progression toward collective agency and advocacy. Women are not only asserting their own rights but are increasingly defending the rights of others. This represents a higher-order transformation, from personal confidence to active solidarity and social accountability, indicating that empowerment is extending beyond the individual to influence group dynamics and community norms.

The qualitative evidence further highlights emerging structural shifts in productive and social roles. Women are increasingly participating in activities previously reserved for men, including property ownership, coxswain and deep-diving in the sea, and engagement in coral-related work. These changes signal a gradual reconfiguration of gendered labour norms within the community.

"The women can own property. They would not lead organisations or take control of organisation property. Equality in work like around corals – women can dive and participate in similar workforce as needed."

— Kilifi South SACCO FGD

Importantly, these changes must be understood in historical context. As recently as 2011, cultural norms prohibited women from touching fishing traps or accessing the ocean. The fact that women are now engaged in aquaculture activities such as prawn farming, water quality monitoring, and leadership within SACCOs represents a genuine cultural shift within a relatively short project cycle. While these changes do not indicate a complete dismantling of restrictive norms, they provide clear evidence of a partial but meaningful transformation in gender relations. The BE project worked to dismantle these barriers by competitively hiring field officers and a project manager from the community who possessed deep-sea diving, swimming, and coxswain skills. By modelling and presenting a situation that rendered restrictive social norms obsolete and unnecessary, these staff created an instant shift in perceptions, sparking debate and debunking prevailing assumptions.

From the implementing partners' perspective, who observed communities across the full project lifecycle and from different professional vantage points, the same pattern of transformation emerges with striking consistency. Despite working in different sites, engaging with different groups, and referencing different individuals, their accounts converge on a shared conclusion: a fundamental shift in women's agency and position within community structures. Through their lens, which spans both counties and all phases of implementation, partners are not describing isolated cases, but a repeated pattern of change observed across multiple contexts. This consistency across independent observations reinforces the robustness of the findings. It suggests that the transformation is not anecdotal, but systemic.

One of the most significant elements emerging from these accounts is the renegotiation of gendered power relations. Implementing partners describe moments where men consciously step aside, allowing women to take up leadership roles. This is not simply an increase in women's participation; it reflects a deeper shift in norms governing authority and legitimacy.

"I've seen women who are not able to speak, being able to speak. Men who are saying 'I cannot be a chairlady because this man is here, let the man be the chair' – I've seen those people claiming their position."

– Implementing Partner

"A young lady who could not even talk to me, looking at me... vied to be the treasurer of one of the BMUs, and she won."

– Implementing Partner

This observation documents a transformation in the social contract between men and women within community governance structures. It is not additive change (more women occupying more roles), but transformational change, where the rules of participation and leadership themselves are being rewritten. A similar transformation is observed from the perspective of training and capacity-building. Implementing partners noted that confidence and voice developed through training translated into tangible institutional outcomes, including women's election into governance structures.

"We saw the boldness in them. We saw the confidence in them. They're able to express their views, their concerns without fear. There was a lady who was very reserved, but she ended up being elected in one of the BMU's committees."

– Implementing Partner

The significance of this change is particularly evident in the context of Beach Management Units (BMUs), which are the primary governance structures for coastal fisheries in Kenya and have historically been male dominated. A woman's election into a BMU committee represents more than an individual achievement, it signifies an institutional shift, embedding women's voices within decision-making structures that govern access to marine resources and influence livelihoods at the community level.

Beyond the emergence of leadership, implementing partners also highlight early signals of durability and sustainability. The persistence of women's leadership roles is closely tied to the continued functioning of community-based organisations (CBOs), which serve as platforms where agency gains are maintained and practised.

"The ladies are much bolder. Even in meetings, they can talk about this innovation and are much more involved. They can venture into the cage platform."

- Implementing Partner

"There were so many benefits and positives when it comes to women empowerment. The women in leadership issue is still alive because the CBO is still alive."

– Implementing Partner

The continued activity of structures such as the Bahari CBO, particularly in sustaining seaweed farming and value-addition activities beyond the project period, provides concrete evidence that empowerment outcomes are not solely project-dependent. Instead, they are being institutionalized within local organizational systems. This evidence reinforces and deepens the beneficiary-level findings. It confirms that the project has contributed not only to individual empowerment but to shifts in social norms, leadership structures, and community governance systems. These changes, while still evolving, represent a meaningful transition toward more inclusive and equitable participation in the blue economy.

From a government perspective, the leadership shift is independently confirmed through formal observation of cooperative governance structures, rather than beneficiary self-report. This distinction is critical: it provides external validation of change from actors responsible for oversight, regulation, and sector performance, thereby strengthening the credibility of the findings.

"More women have taken leadership roles – 80% women with only 20% men in leadership in Kilifi North; in Kilifi South, 100%."

—County Officer, Kilifi County

This evidence confirms that the leadership shift is not only perceived internally within project groups but is also visible within formal governance and cooperative systems monitored by county authorities. From a sectoral perspective, the transformation extends beyond leadership representation to broader participation in the blue economy:

"More females have ventured into the blue economy sector, unlike earlier when the sector was dominated by men. Women have now seen that they can be part of the management and leadership."

— Director of Tourism, Kilifi County

This reflects a widening of women's economic and institutional roles, signalling that the project's influence is extending beyond immediate beneficiaries into the broader sectoral landscape. At the national level, fisheries governance perspectives further reinforce this shift. The reference to specific groups, such as Mama Fatuma's group in Kwale, demonstrates that the transformation is tangible, localized, and recognizable to external observers, rather than abstract or project contained.

"There's a change in Kwale. Mama Fatuma's group – there's a change in terms of responsibilities and leadership. The project has enabled them to improve and enhance themselves, financially, as women."

— Assistant Director, Kenya Fisheries Services

This observation links leadership change with economic empowerment, suggesting that shifts in agency are accompanied by improvements in financial autonomy and livelihood outcomes. This evidence confirms that the changes observed at the beneficiary and implementing partner levels are also recognized institutionally within formal governance systems. This elevates the finding from perceived empowerment to verified structural change, demonstrating that women's increased agency is influencing not only household and group dynamics, but also the governance of the blue economy itself.

Evidence Assessment – Women's Agency | Level: STRONG

All four FGDs, all six implementing partner interviews, and all five adult KII respondents independently corroborate this finding with behavioural specifics and named cases. The convergence is too consistent and specific to be due to social desirability bias. Change is psychological (confidence), behavioural (boat-riding, diving, IMTA platforms), relational (household renegotiation), and institutional (BMU elections, SACCO leadership, CBO governance). Critical caveat: five of six implementing partners independently warn that gains are fragile without continued mentorship and income continuity, the evaluation's most consistently evidenced sustainability risk. Dr. Anne Maundu: women could slide back.' Dr. Linus K'osambo: 'without income, everything goes back to factory settings.'

3.3.2 Training Outputs: Reach and Application

The survey findings indicate that training was one of the most effectively delivered components of the Blue Empowerment Project and represents the primary causal mechanism through which change was realized. Among technology adopters, 86.96% cited BE project training as the main driver of adoption, confirming that capacity building was central to the project's Theory of Change.

Training reach was substantial, and participation was strongly gender responsive. Women accounted for most of the attendance across all training areas, including value addition (85.5%), seaweed techniques (77.5%), and market linkages (79.6%). This confirms that the project successfully centered women within the training delivery architecture, ensuring that those most affected by structural exclusion were also the primary recipients of knowledge and skills.

More importantly, training translates into high levels of practical application. Application rates were particularly strong in action-oriented domains: governance (80.7% always apply), cage management (80.3%), market linkages (79.2%), and record-keeping (76.8%). These rates indicate that participants are not only acquiring knowledge but are actively using it in their livelihoods and organizational roles, performing at levels comparable to, or exceeding, similar rural livelihood interventions.

Table 16: Beneficiary Training and Application of Skills Trained

Training Area	Trained (%)	Women Attend (%)	Always Apply (%)	Sometimes Apply (%)
Value addition	57.2	85.5	66.1	17.8
Cage management	57.9	62.1	80.3	12.8
Seaweed techniques	49.3	77.5	67	26.2
Record keeping	46.1	71.6	76.8	8.4
IMTA	42.1	72.4	32.2	58.6
Gender awareness	43.5	71.9	73.9	2.3
Governance	30.1	72.6	80.7	6.5
Market linkages	24.3	79.6	79.2	4.2
Climate adaptation	21	62.8	67.4	4.7
Swimming / boat riding	10	36.8	84.2	—

The pattern of application is analytically instructive. Practical, immediate, and low-capital skills, such as governance, cage management, and market linkages, show the highest consistent application rates. In contrast, IMTA shows a different pattern: 32.2% “always apply” and 58.6% “sometimes apply.” This does not indicate training failure. Rather, it reflects structural constraints to adoption, particularly the need for capital, infrastructure, and inputs to operationalize the system. In other words, participants possess the knowledge but lack the resources to fully implement it. This distinction is critical for future programming: the appropriate response is capitalization and system support, not additional training.

The quantitative findings are strongly supported by qualitative evidence, which confirms that training translated into real organizational and behavioural change:

"We had the financial training, the circle-led training... they learnt a lot. Even as I speak, those circles are formed and functional".

"For the financial training... how to do financial records, how to mobilise resources, governance and structure... these circles have already been formed."

"We took them through the business models... it shifted their mindsets from how they are used to running their businesses."

— Implementing Partner

These accounts demonstrate that training outcomes extended beyond technical skills to include mindset shifts, organizational formation, and institutional strengthening, particularly through SACCOs and community groups. However, despite strong reach and application, several structural limitations were identified that constrain the full potential of training outcomes. First, language accessibility remains a significant barrier. Training materials were developed primarily in English, whereas most beneficiaries operate in Swahili and local coastal dialects. As a result, while training sessions were effective, the materials themselves are not easily usable for reinforcement, peer learning, or long-term reference.

"They were telling us: 'Hii ni kizungu.' [This is in English.] Based on their level of education, they want materials to be in Swahili."

— Implementing Partner

Second, knowledge retention and dissemination are constrained by limited access to training materials. Manuals are retained by implementing partners rather than distributed to communities, limiting their utility as ongoing learning resources.

"The manuals are with us. They are not with them. When it comes to referencing, where are they going to reference?"

— Implementing Partner

Third, there is a clear demand for practical, hands-on learning approaches. This is not a rejection of conceptual training, but an indication that practical engagement is the mechanism through which learning becomes durable behaviour. Participants consistently emphasized that experiential learning, peer to peer learning, practical handling of cages, managing seaweed farms, or applying financial tools, leads to deep understanding, boost confidence bolster retention and more sustained application.

"Most of the women were requesting they just don't need a lot of theories, they need practicals."

— Implementing Partner

Finally, the absence of continuous mentorship and follow-up support limits the long-term effectiveness of training.

"One-off training is not favourable for them. We agreed to handhold them in some sort of mentorship."

—Implementing Partner

"Translate the training materials into a language they understand better."

— Assistant Director, Kenya Fisheries Services

Beyond individual-level skills acquisition, the Blue Empowerment Project generated institutional capacity gains embedded within Community-Based Organizations (CBOs) and SACCOs, a dimension of impact that is not fully captured by individual training metrics. These organizational competencies represent a more durable and system-level form of capacity building, as they are retained within institutions rather than dependent on individuals who may exit over time. Evidence from implementing partners highlights this shift clearly. At the institutional level, organizations have developed structured capabilities in planning, reporting, and project management:

"Business Model Canvas was done extensively. At the institutional level, Bahari CBO now knows how to handle projects and do technical and financial reporting."

— Implementing Partner

This transition is significant. A CBO with the ability to manage technical and financial reporting has a fundamentally different relationship with external actors, including funders, government agencies, and private sector partners. It moves from a passive beneficiary to an active institutional actor capable of engaging in, negotiating, and sustaining development interventions. Community-level evidence reinforces this institutional depth. From the perspective of long-term group leadership, capacity gains are not abstract but embedded in routine organizational practice:

"Before BE, we did not monitor water conditions... now we measure the water regularly. I can now tell you the current condition of the water."

— SHG Leader, Kilifi North

This reflects a shift from externally driven activities to internally sustained technical practices, including water quality monitoring, production tracking, and SACCO record management. These competencies indicate that knowledge has been institutionalized within group systems, rather than remaining at the level of individual awareness.

Evidence Assessment: Capacity Building

Level: **STRONG** (reach) | **MODERATE-STRONG** (Institutional Gains)

Training reach is high, with 78.75% of respondents exposed to at least one training area, and application rates across practical domains ranging from 67% to 81%. These results confirm that training was both effective and utilized.

However, structural gaps remain. Language barriers (English-only materials), limited training duration, and restricted access to manuals were consistently identified across multiple independent sources, including implementing partners, government actors, and beneficiaries. These constraints limit the full potential of knowledge retention and peer-to-peer dissemination.

At the same time, institutional capacity gains at the CBO and SACCO level represent a critical strength. These organizational competencies, particularly in governance, financial management, and technical monitoring, provide a foundation for sustainability that individual training alone cannot achieve. FGD evidence further supports this, with self-reported application of empowerment-related training ranging between 60% and 100%.

Looking forward, further programming should focus on addressing identified design gaps, including the localization of materials (Swahili), prioritizing practical training approaches, and structured mentorship, while maintaining the strong reach and uptake already achieved.

The BE Project contributed to broad improvements in household income, livelihood diversification, and material well-being. However, these gains were not evenly distributed across all production systems or beneficiary groups. The evidence shows a generally positive livelihood effect, but also highlights important financial risks, particularly for beneficiaries engaged in fish farming.

1. Improved household income and reliance on blue economy activities

Quantitative findings show that 73.26% of respondents reported improved household income since joining the project. Specifically, 13.19% reported that their income was “much better,” while 60.07% reported that it was “somewhat better.” This suggests that the project created meaningful economic benefits for most beneficiaries. However, 9.52% reported worse income outcomes, indicating that not all participants benefited equally. The project also appears to have deepened community engagement in blue economy livelihoods. A total of 84.25% of respondents reported increased reliance on blue economy activities compared to before the project, with 59.71% reporting “somewhat more” reliance and 24.54% reporting “much more” reliance. This points to an important behavioural and livelihood shift, where beneficiaries are increasingly turning to seaweed farming, aquaculture, value addition, and related enterprises as core livelihood strategies.

These findings are reinforced by qualitative evidence showing that income gains translated into tangible improvements in household well-being. Beneficiaries consistently describe better housing, improved food security, and increased financial independence:

“Before my house was made of mud and just one room which was not enough. Through the project, especially the training transport reimbursement, I have expanded my mud house, and we have bedrooms for myself and husband and our girl child in her room.”

— Adult Female Respondent, Jitihada SACCO FGD

Another respondent highlights the shift in economic agency:

“Before I’d wait for my husband... now I can directly depend on myself to sort some household matters.”

— Adult Female Respondent, Jitihada SACCO FGD

“Production has increased... the communities can sustain themselves longer. With businesses being there, their income has increased.”

— Project Coordinator

These accounts demonstrate that income improvements are not only monetary but also reflect broader changes in household welfare, dignity, and decision-making power. In addition, the project has significantly increased reliance on blue economy activities. Qualitative narratives explain this shift as a combination of improved skills, confidence, and opportunity:

Beyond income, the project supported livelihood diversification and market integration. Beneficiaries indicated improved access to markets through SACCOs and group networks, enabling them to connect with buyers and coordinate sales. There is also evidence of a shift from subsistence to more market-oriented production systems. Beneficiaries describe adopting business practices such as record-keeping, cost tracking, and savings:

“If I have a product, I can communicate through the group... accessing a market is no longer a major challenge.”

— SHG Leader, Kilifi North

“I now keep records... after deducting household expenses, I save the profit.”

— Adult Female Respondent, Jitihada FGD

Food security has also improved, with households increasingly adopting a dual strategy of market engagement and self-consumption. Rather than selling all production, beneficiaries now retain a portion for household use, reflecting a shift toward more balanced and resilient livelihood systems.

"Now we sell a portion and also keep some for household consumption. People are eating better."

— SHG Leader, Kilifi North

This qualitative insight illustrates a critical change in livelihood behaviour. Households are no longer solely dependent on market sales for income; they are also using their own production to stabilize food access and nutrition at the household level. This reduces vulnerability to price fluctuations, market shocks, and seasonal income variability. The qualitative findings are strongly supported by quantitative evidence. Food security was identified as a major benefit of project-supported interventions, with 94 respondents (62.25%) ranking it as the most important outcome associated with IMTA adoption. This convergence of evidence confirms that improvements in food security are both statistically significant and experientially validated.

2. Production systems: explaining uneven income outcomes

The distribution of income gains varied significantly across production systems, with clear differences in financial viability, accessibility, and risk. Seaweed farming emerges as the most stable and inclusive livelihood pathway. It generates a mean net income of KES. 9,490 per cycle, supporting frequent production cycles (7.9 per year). IMTA showed modest positive returns (KES. 1,670 per cycle) but remains limited to early adopters due to its technical complexity and higher capital requirements. While quantitative data shows its potential scale and revenue, qualitative insights suggest that its adoption is constrained by capacity gaps and uneven knowledge dissemination. Fish farming presents the greatest challenge, with a mean net loss of 4,430 per cycle. This is not simply a technical issue but reflects deeper structural challenges. Qualitative evidence points to high input costs, limited technical support, and weak market linkages as underlying factors:

"We mainly relied on small amounts of tilapia... but through BE we were introduced to business-oriented approaches like prawn farming. Our income has increased".

— Adult Female Respondent, Jitihada SACCO FGD

This highlights an important adaptation pathway; beneficiaries are shifting toward higher-value species to overcome system inefficiencies. However, not all farmers are able to make this transition, contributing to uneven outcomes.

3. Gendered asset ownership and limits to transformation

Despite these gains, structural inequalities in asset ownership remain a major constraint. While 44.69% of respondents reported acquiring new assets, control over high-value productive assets remains overwhelmingly male-dominated. Women have little to no ownership of fishing boats, outboard engines, or fish cages.

Qualitative evidence reinforces this structural limitation, showing that women's economic participation is still shaped by cultural norms and access constraints. While women have gained income and agency, their participation remains concentrated in lower-capital activities such as seaweed farming and processing.

However, there is evidence of progress within project-supported domains. Women report increased control over seaweed farming and value addition activities, as well as improved confidence in managing income and engaging in markets.

3.3.3. The IMTA Adoption Gap: A Capital Problem, not a Knowledge Problem

The Blue Empowerment Project made important progress in promoting knowledge and awareness of IMTA. The endline survey shows that many respondents now understand what IMTA involves, especially the integration of fish and seaweed farming and the ecological relationship between the two systems. However, this increased knowledge has not translated into widespread adoption. This points to a key effectiveness gap: the project was effective at building awareness and understanding, but less effective at enabling the actual uptake of IMTA at scale.

The evidence suggests that the low adoption of IMTA should not be interpreted as a lack of interest or knowledge among beneficiaries. Rather, it reflects broader structural constraints, especially capital requirements, infrastructure limitations, incomplete demonstration cycles, licensing challenges, and uneven access to practical training. In this sense, the IMTA adoption gap is better understood as an enabling-environment problem rather than a knowledge problem.

Baseline to endline: Quantifying the knowledge shift

At baseline, awareness of IMTA was low. Only 20% of respondents were aware of IMTA overall, with awareness higher in Kwale County at 40% and much lower in Kilifi County at 12%. Most respondents (62%) were unaware of IMTA, while 18% were uncertain.

Table 17: Baseline Level of IMTA Awareness

IMTA Awareness	Kilifi County (%)	Kwale County (%)	Overall (%)
Aware	12	40	20
Uncertain	30	12	18
Not aware	58	48	62

At the endline, the picture had changed substantially. Of the 154 respondents who described what IMTA involves, 69 (44.81%) had basic awareness and could identify IMTA as the integration of fish and seaweed farming. A further 60 respondents, representing 38.96%, demonstrated good understanding and could explain the benefits of integration, including nutrient recycling and ecological balance across trophic levels. Another 9 respondents, representing 5.84%, had detailed technical knowledge and could explain more advanced aspects such as species selection and waste assimilation processes. Only 16 respondents (10.39%) had no substantive knowledge of IMTA.

Table 18: IMTA Knowledge Level at Endline

IMTA Knowledge Level at Endline	Respondents	Percent (%)
Basic awareness – fish and seaweed integration	69	44.81
Good understanding – can explain integration benefits and nutrient recycling	60	38.96
Detailed technical knowledge – species selection, waste assimilation	9	5.84
No substantive knowledge	16	10.39

This represents a major knowledge achievement. Compared with the baseline, where only 20% of respondents were aware of IMTA, the endline results show that 89.61% now have at least basic knowledge. This suggests that the project was effective in introducing IMTA as a new aquaculture concept and in building community-level understanding of its ecological logic. Importantly, the knowledge acquired was not only superficial. Some respondents could explain IMTA in practical terms, including how fish and seaweed interact within the same production system. This was also reflected in the qualitative evidence, where one respondent explained the IMTA principle in simple community language:

“Uchafu wa samaki ni mbolea kwa mwani. [Fish waste is fertiliser for seaweed.]”

— Adult Female Respondent, Jitihada FGD, articulating IMTA circular ecology in Swahili

This shows that the core ecological principle of IMTA had been understood and translated into local knowledge. Therefore, the issue is not that communities failed to understand the technology. Rather, the challenge lies in moving from awareness and conceptual understanding to actual implementation.

Low adoption despite improved knowledge

Despite strong gains in knowledge, actual engagement in IMTA remains low. The endline survey shows that only 29 respondents (11.69%) reported engaging in IMTA, while 219 respondents (88.31%) were not engaged.

Table 19: Engagement in IMTA

Engagement in IMTA	Freq.	Percent (%)	Cum.
No	219	88.31	88.31
Yes	29	11.69	100
Total	248	100	

This creates a clear gap between knowledge and adoption. On the one hand, the project succeeded in raising awareness and fostering technical understanding. On the other hand, only a small proportion of respondents were able to translate that knowledge into practice. This gap is central to assessing effectiveness because it shows that knowledge generation alone was not sufficient to achieve widespread technology uptake. The adoption gap becomes even clearer when compared with other blue economy activities. Seaweed farming and fish farming, or aquaculture, appear more established as livelihood activities. Average income from aquaculture is higher than from seaweed farming, with aquaculture generating KES. 31,567 per cycle compared to KES. 20,889 per cycle from seaweed farming. This indicates that aquaculture has income potential. However, IMTA adoption remains much lower, suggesting that its uptake is constrained not by a lack of potential but by the higher requirements for establishing and sustaining the system.

The qualitative finding further suggests that communities are not rejecting IMTA. In some cases, beneficiaries expressed interest in receiving further training and exposure to adopt the technology. This shows that the low uptake should not be read as lack of demand. FGD evidence reveals both the depth of community IMTA understanding and a critical intra-group diffusion failure operating simultaneously. Additionally, the findings further highlight a practical knowledge diffusion problem. IMTA knowledge reached some individuals, but it did not always circulate effectively within groups. Therefore, while endline survey results show improved awareness overall, the interviews reveal that access to practical, hands-on knowledge remained uneven.

“Out of 8 of us here, only 1 has gone, and we’ve seen the picture he took at the deep sea. The one who saw and got some knowledge has not shared it with the rest of us.”

— Adult Female Respondent, Jitihada SACCO FGD

“Take us to a seminar and train us on this IMTA so that we can adopt it. Jitihada SACCO has not received extensive training on IMTA.”

— Adult Female Respondent, Jitihada SACCO FGD

In locations where IMTA was implemented or demonstrated more directly, such as Kwale, beneficiaries reported positive outcomes. Interviewed participants described IMTA as producing more fish, better quality fish, and additional employment opportunities:

"Benefits of IMTA: More fish produced within the IMTA. Fish produced are of high quality. Fleshy fish because they get fed and don't move about to look for food. Created more job opportunities."

— Tushirikiane SACCO FGD, Kwale

This indicates that beneficiaries who had direct experience with IMTA could identify specific technical and economic benefits. The reference to "fleshy fish" reflects a practical understanding of production quality. The mention of job creation also indicates that beneficiaries saw IMTA not only as a farming technology, but as a livelihood opportunity. Therefore, the evidence suggests that IMTA has perceived value among communities where it has been experienced. The problem is that this experience was not broad enough across all project sites.

The Blue Empowerment Project was effective in building strong awareness and understanding of IMTA, with knowledge increasing from low baseline levels to nearly 90% of respondents demonstrating at least basic understanding at endline. However, this did not translate into widespread adoption, with only about 11.7% of respondents actively engaging in IMTA. This gap indicates that the challenge is not lack of knowledge or interest, but structural barriers to adoption. Qualitative findings indicated that communities were willing to adopt IMTA but were constrained by several interrelated factors, including high capital requirements, limited access to inputs, and uneven exposure to practical training. In addition, infrastructure challenges, particularly the failure and loss of floating raft systems, limited opportunities for communities to observe and learn from fully operational IMTA systems. The inability to run complete production cycles further reduced confidence in the technology's viability. Regulatory and licensing uncertainties also created hesitation among potential adopters. While beneficiaries understood the integration of fish and seaweed and recognised its benefits, these structural and implementation constraints prevented wider uptake. In contrast, more accessible activities such as seaweed farming were widely adopted, reinforcing that IMTA, although technically promising, requires stronger financial, infrastructural, and institutional support to scale. The project successfully established a strong knowledge base and demonstrated proof of concept but fell short in creating the enabling conditions necessary for broader adoption.

IMTA performance evidence is promising but remains incomplete. Qualitative findings and interviews indicated that where the system was operational, there were clear technical and market advantages. Fish produced within IMTA systems were reported to perform better, while seaweed grown in cages was of higher quality compared to traditional off-bottom methods. These observations suggest that IMTA has the potential to improve both productivity and product quality when properly implemented. However, the same qualitative evidence also highlights that this performance was not consistently demonstrated across full production cycles. In many cases, the implementation remained at an early stage, meaning communities did not have sufficient exposure to a fully functioning system over time to build confidence for adoption. As a result, much of the evidence remained partial and did not yet provide a strong, community-wide basis for scaling decisions. Overall, the project successfully demonstrated the technical feasibility and potential economic benefits of IMTA, effectively establishing a proof of concept. However, it did not fully translate this into direct, large-scale economic impact at the community level. At the same time, interviews with institutional stakeholders indicate growing government interest in scaling the technology, suggesting that IMTA adoption is still at an early stage, where the foundations have been laid but further investment, stronger demonstration, and enabling support systems are required for wider uptake.

3.3.4 SACCO Formation: The Institutional Architecture of Sustainability

The formation of SACCOs represents the core institutional achievement of the Blue Empowerment Project and the primary vehicle through which sustainability is expected to be realized. Quantitatively, 57.34% of respondents are SACCO members, of whom 69.66% are women, confirming that these institutions are both widely adopted and strongly gender-responsive;

Across all four FGD sites, SACCOs were established with the project's support. They currently deliver technical training to 59.28% of members, provide access to savings facilities to 58.82%, and support business record-keeping for 38.46%. However, their value extends beyond current service delivery. Across all evidence streams, the SACCO is consistently identified as the most valued institutional outcome of the project, not the technologies or trainings, but the SACCO itself as a platform for long-term economic organization and access.

Table 20: Inventory of Services Offered by SACCO

SACCO Service	Current Delivery (%)	Beneficiary Need (%)	Gap
Technical training and advice	59.28	86.77	-27.49pp
Access to savings facility	58.82	—	Core function met
Business record-keeping	38.46	—	Active
Credit/loans	33.94	42.41	-8.47pp
Governance training	33.03	—	Active
Market linkages	22.15	36.58	-14.43pp
Input provision	27.6	44.36	-16.76pp

The loan access gap (-8.47 percentage points) is particularly significant. This is not a minor implementation lag; it represents the threshold between a SACCO that transforms economic agency and one that provides savings infrastructure while members remain dependent on individual financial resources. The FGDs confirm that SACCOs are still in the shares and registration phase and have not yet reached full operational maturity for loan issuance.

"The SACCO was once just a dream for us, but now we have a place where we can save our money and also access loans at lower interest rates. It is not like a bank, which has many requirements."

— FGD, Kilifi North

"The SACCO has benefitted us because we can get loans, helped with growth of our businesses, we are able to formally save, accessed training giving us skills to progress. Also the SACCO gives opportunity to get external funding."

— FGD, Kwale

The articulation from the FGDs is analytically significant. The SACCO is valued not only for its current functions, but for the institutional access it enables, formal savings systems, skills development, and pathways to external financing that informal groups cannot reach. This demonstrates that communities understand the SACCO as a strategic institutional asset, not merely a financial tool. However, the gap between aspiration and operational reality is equally clear:

"Not yet. Our SACCO is still forming, and we need to streamline the records, bank statements, and meeting minutes."

— FGD, Kwale

"Many have registered... 50 and above. We are now at registrations, not yet on savings."

— FGD, Kilifi North

These accounts confirm that SACCOs are still at an early stage of institutional development, requiring further support to transition into fully functional financial entities. The strongest sustainability signal emerges from beneficiary awareness of past project cycles and failure patterns:

"When some project ends, the groups also tend to collapse... for us, we intend to continue with the SACCO. It will not end. We will continue."

— FGD, Kilifi

This reflects informed intent, not optimism, communities are aware of the risks of post-project collapse and are explicitly positioning the SACCO as a mechanism to avoid that outcome. At the institutional level, enabling mechanisms for sustainability also exist. The Kilifi County cooperative fund provides zero-interest microfinance to cooperatives, offering a post-project financing pathway that most SACCOs have not yet accessed. Additionally, behavioural shifts toward financial discipline are evident:

"From the last meeting, groups were given funds; from that point, the majority of them decided to put these funds in a cooperative – the initiative has improved their financial literacy."

– FGD Respondent, Kilifi County

Evidence Assessment – SACCO Formation

Level: STRONG (Formation); MODERATE (Operations)

SACCO formation is near-universal across project sites, with strong and consistent evidence of community ownership, aspiration, and institutional understanding. However, all SACCOs remain at the shares and registration phase and have not yet transitioned to full savings and loan operations.

The identified gap, credit access (–8.47pp), market linkages (–14.43pp), and input provision (–16.76pp), define the SACCO development agenda for the next phase. While the institutional architecture for sustainability is firmly established, functional sustainability depends on capitalisation, governance strengthening, and continued operational handholding.

The presence of county-level financing mechanisms provides a viable pathway for scale and sustainability. The priority for Phase 2 is therefore not SACCO creation, but SACCO maturation, supporting the transition from formation to fully operational financial institutions capable of delivering credit, supporting enterprise growth, and sustaining collective action.

3.3.5 Policy and Advocacy: Genuine Gains, Critical Emerging Threats

The Blue Empowerment Project achieved meaningful influence in policy and advocacy at both national and county levels. Evidence from interviews indicates that the project successfully positioned itself within key governance processes, ensuring that project insights and community perspectives contributed to shaping the enabling environment for women's participation in the blue economy.

Qualitative findings and interviews indicated that the project engaged directly with policy processes through Technical Working Group (TWG) participation and contributions to emerging policy frameworks. Project representatives reported involvement in national-level discussions under the Ministry of Blue Economy and Petroleum, as well as contributions to county-level gender and cooperative development policies in both Kilifi and Kwale. In addition, the project contributed insights toward the development of a national seaweed policy.

"We are now part of a Technical Working Group by the Ministry of Blue Economy and Petroleum. We've contributed to the policy process of the gender policy in both Kilifi and Kwale, and to the cooperative development policy."

– Implementing Partner

"We were having a seaweed policy that is coming up, a national one... we contributed, we gave some of our insights in the documentation"

–Implementing Partner

These contributions are significant because they go beyond project-level outputs and influence systems-level conditions. By embedding lessons on women's economic empowerment, collective action through SACCOs, and participation in the blue economy into policy frameworks, the project has helped shape how future interventions and investments will be designed and implemented. This positions the project not only as an implementer but also as a contributor to long-term institutional change. However, alongside these gains, qualitative evidence highlights critical environmental threats that could undermine the sustainability of project outcomes if not addressed. Interviews with key stakeholders identified emerging risks related to industrial development and gaps in environmental governance.

"There is already a very big threat: the expansion of the Simiyu port will lead to pollution of the Changamwe-Kingiri-Kibuyuni seaweed-fish ecosystem – rendering that place unusable for aquaculture. This area must be demarcated as an aquaculture region in marine spatial planning."

— Implementing Partner

"Something we missed: we were talking climate but didn't have a team like NEMA. I called out NEMA several times during pitching because of the two major companies pouring into River Ramisi upstream of seaweed farms."

— Value Addition Specialist

One major concern is the potential impact of the planned Shimoni port expansion on the coastal aquaculture ecosystem in the Changamwe-Kibuyuni area. This area currently supports seaweed farming and the project-promoted fish-related activities. Stakeholders indicated that without proper marine spatial planning and protection measures, pollution from port development could render the area unsuitable for aquaculture. This represents a structural, ecosystem-level risk that goes beyond the scope of project intervention but directly affects its long-term impact.

A second concern relates to pollution in River Ramisi, where upstream industrial activities were reported to be affecting water quality near seaweed farming areas. Qualitative findings suggest that attempts were made to engage environmental regulatory bodies, but coordination gaps limited effective response. This points to a broader issue of institutional misalignment in environmental governance, where regulatory oversight has not kept at pace with emerging threats.

Evidence Assessment – Policy and Advocacy | Level: MODERATE-STRONG (Achievements); STRONG (Environmental Threats)

TWG membership, county gender and cooperative policy contributions, and national seaweed policy input are confirmed policy achievements.

3.3.6 Value Addition and Market Linkages: Training Delivered, Market Chain Incomplete

Value addition and market linkages emerged as one of the more complex outcome areas in the evaluation. The project made clear progress in building knowledge and practical skills for the value addition of fish and seaweed, and there is evidence that some beneficiaries have begun translating these skills into small-scale enterprise activity. However, the transition from training to sustainable commercialization remains incomplete. In most sites, value addition has generated strong interest, confidence, and early experimentation, but beneficiaries still face constraints related to equipment, follow-up support, product standardization, and reliable access to buyers.

The qualitative evidence shows that value addition training was relevant and, in some cases, immediately applied. In Kwale, for example, a female youth respondent reported that fish value addition training enabled her to develop a product idea and begin approaching potential buyers:

"In value addition trainings, I got skills on how to prepare samosas. I even reached out to the owner of hotels and told them that I am good at samosa making, and if they have visitors and need large orders, they can contact me. I like fish samosas."

— Youth Female Respondent FGD

This suggests that the project succeeded in stimulating entrepreneurial behaviour and linking some beneficiaries' skills to local hospitality markets, even if these linkages remained informal and individually driven.

At partner level, the value addition component was also seen as a significant achievement, particularly because later trainings became more practical and hands-on. One implementing partner observed that women requested fewer theoretical sessions and more practical demonstrations, after which subsequent fish and seaweed value addition trainings involved beneficiaries directly in the production process. The respondent concluded that *"in terms of the seaweed value addition and fish value addition, that's actually something that I think is a great achievement to most of this target beneficiary women groups."*

Nevertheless, the market chain remains underdeveloped. In Kilifi South, participants noted that *"value addition has not attained its benefit because they lack equipment,"* adding that there was "lack of follow up especially on training done" and that *"the market is not available for the value-added products."* This points to a gap between skills transfer and enterprise viability: beneficiaries may know how to make products, but lack the equipment, certification pathways, packaging, working capital, buyer contracts, and market intelligence needed to turn these products into sustainable income streams.

Future programming should therefore move beyond training as the main output and support a fuller value-chain approach. This should include provision or shared access to processing equipment, product quality assurance, branding and packaging, food safety compliance, cooperative aggregation, buyer engagement, and structured off-taker arrangements with hotels, local retailers, institutional buyers, and potentially online markets. This recommendation aligns with the implementing partner's reflections that the next phase should prioritize product diversification and stronger market linkages, as many products are still sold locally and require broader market access to increase incomes.

Training delivery: Strong reach, strong application, strong female concentration

Value addition training reached 57.21% of respondents, making it one of the most widely accessed training areas in the project, at a level comparable to cage management. Adult women accounted for 85.47% of all value addition trainees, representing the highest level of female participation across all training domains.

Application of these skills is also notably high. A total of 66.1% of respondents reported that they always apply value addition skills, while a further 17.8% reported that they sometimes apply them. This results in a combined application rate of 83.9%, indicating strong behavioural uptake and practical use of the training among beneficiaries.

Qualitative evidence reinforces this finding. In the Jitihada FGD, a youth female respondent described how she had taken the initiative to approach hotel owners to secure bulk orders for fish samosas. This example provides clear evidence that value addition training is not only building skills but is also stimulating proactive, market-oriented entrepreneurial behaviour among participants.

"For the fish and seaweed value addition we will continue easily. However, for the IMTA not so, because the majority have no knowledge."

— Adult Female Respondent, Jitihada SACCO FGD

This testimony is analytically significant in two important respects. First, it demonstrates strong continuity intent for value addition. Communities do not need to be persuaded to continue these activities; they are already committed and actively engaging in them beyond the project lifecycle. Second, it highlights a clear asymmetry between value addition and IMTA. Value addition is accessible, familiar, and can be implemented using locally available resources and equipment. In contrast, IMTA remains technically unfamiliar, capital-intensive, and dependent on specialised inputs and infrastructure. These differences indicate that value addition and IMTA are following distinct adoption pathways within the same communities. As such, Phase 2 should not apply a uniform support model, but rather tailor interventions to reflect these differing levels of readiness and scalability.

Further evidence of sustained value addition outcomes is seen in the Kilifi groups referenced by Julia Mumbi. These groups provide some of the strongest examples of post-project enterprise continuity in the dataset. Seaweed-based and cosmetic products are still being produced and sold, and Bahari CBO was described as performing "quite well" even after project close. This represents a high-level outcome for value addition: self-sustaining enterprise activity that continues independently, without ongoing project facilitation.

The training-without-tools problem: Kilifi South's three simultaneous failures

The high overall application rate of 83.9% obscures important variation at site level, masking specific locations where value addition has not translated into viable outcomes. Evidence from the Kilifi South FGD provides the clearest diagnosis of this gap, identifying three structural constraints operating simultaneously.

"Value addition has not attained its benefit because they lack equipment. Lack of follow up especially on training done. The market is not available for the value-added products."

— Kilifi South SACCO FGD

First, participants reported limited access to appropriate equipment, which has constrained their ability to operationalize the skills acquired during training. Second, there was a lack of sustained follow-up support after the initial training, which reduced opportunities for troubleshooting, refining techniques, and progressing from basic skills to enterprise-level production. Third, and most critically, participants highlighted weak or absent market linkages, noting that there are no reliable buyers for value-added products.

Each failure is independently disabling. A woman trained to make seaweed cosmetics without a grinder, dryer, or packaging equipment cannot produce at a commercial scale. A woman who completed training six months ago without follow-up support cannot apply new skills to unfamiliar production challenges. A woman who produces value-added seaweed products without a known buyer cannot generate income from those skills. Together, these constraints illustrate that while training uptake and reported application may be high in aggregate terms, effective value addition requires a broader enabling environment. Without equipment, continued technical support, and functional market access, skills alone are insufficient to drive sustainable enterprise development. It cannot be unlocked until all three gaps are addressed.

The aggregator gap: Why the market chain was never completed

The market linkage findings point to a broader systemic breakdown rather than an isolated issue at specific sites. Collective sales through SACCO structures account for less than 5% of total sales across all three production systems. This low level of collective marketing is not due to reluctance among communities, as both SACCO formation data and qualitative evidence show a strong preference for collective approaches. Instead, the constraint lies within the market chain itself, particularly at the aggregation stage.

The critical gap is the lack of a stable, functional aggregator. The entity responsible for purchasing from producers and linking them to higher-value markets was financially constrained and not fully operational. As a result, even where production and organization were strong, the market channel remained weak.

This issue is most clearly articulated by Victor Opondo, Director of SMC, the project's main aggregation partner. His account stands out in the implementing partner data because it explains the market breakdown from the buyer's perspective rather than producers', offering a more complete understanding of the structural limitations affecting market linkages.

"We have been addressing the issue of production, but we have never addressed the issue of the market. Most people tend to look at aggregators as people who are established. But we have a challenge."

— Director, SMC

The assumption that aggregators are financially established to an extent that they have the working capital to purchase consistently from farmers at the volumes that make collective selling viable is a design assumption that the evidence falsifies. SMC, as an emerging coastal aggregator, faces the same capitalization constraints as the SACCO-based producer groups it is meant to serve. Asking an undercapitalised aggregator to provide consistent market access to undercapitalised producers is asking both parties to solve the other's problem with resources neither has.

"We need to look at access to financing, to grants or microcredit for the aggregators... for us to develop a sustainable revenue stream."

"The farmer expects us to buy, buy, buy. That constant buying needs to be supported."

— Director SMC

"The farmer expects us to buy, buy, buy" succinctly captures the core dynamic of market linkages: reliable and continuous purchasing is what motivates farmers to sustain production at scale and maintain quality. In the absence of this consistency, production is typically limited to household consumption or irregular local sales, with little incentive for expansion.

The breakdown of this consistent buyer relationship, largely due to the aggregator's limited working capital, has ripple effects across the entire value chain. It reduces farmers' motivation to produce, weakens the rationale for collective marketing through SACCOS, and leaves value addition skills underutilised due to the absence of dependable market outlets.

This challenge should therefore not be understood as a failure of the aggregator alone. Rather, it reflects a broader market system constraint. Addressing it requires strengthening the financial capacity of the aggregator, effectively positioning it as a critical market enabler whose stability supports producers, sustains supply chains, and unlocks the commercial potential of value addition activities.

The registration-timing gap: Why market handholding was not completed

Dr. Joel Onyango's testimony adds a second structural explanation for the incomplete market linkage: the business unit registration timeline intersected fatally with the project's market linkage window.

"The handholding between a business enterprise and a market was what we were never able to achieve. And we were not able to achieve it because of time, but also because the business units had to be registered first."

— Implementing Partner

Business units must be formally registered before they can engage in core commercial activities such as signing supply agreements, opening bank accounts, and being recognised by buyers as legitimate business entities. However, the registration process, particularly for newly formed groups navigating cooperative structures, is time-consuming and often administratively complex.

In this case, many BE-supported business units were only nearing registration readiness toward the end of the project lifecycle. By that point, the implementation window for providing structured market linkage support had effectively closed. This reveals a clear sequencing gap: market linkage interventions depend on the existence of registered entities, yet the time required to achieve registration exceeded the timeframe allocated for downstream market engagement. Importantly, this does not indicate a flaw in the market linkage component's design. Rather, it reflects a project management issue in which registration support was initiated too late in the project cycle, limiting the ability to fully operationalize market linkages.

Dr. Benard Simiyu further highlights an additional dimension related to digital market development. While efforts were made to explore digital platforms to strengthen market access, these initiatives remained incomplete by project end, suggesting that alternative market channels were identified but not fully developed within the available timeframe.

"Most of these products that are produced are normally sold locally... we have come up with a marketing portal that is now under development so that they can attract international markets."

— Implementing Partner

The marketing portal that remained under development at project close should be understood as an asset in transition rather than a completed outcome. While the conceptual design has been established and the strategic direction is sound, the platform has not yet reached the level of operational functionality required to effectively connect producers to international buyers.

As such, this initiative represents a priority for Phase 2 completion rather than a fully realised Phase 1 achievement. Its presence nonetheless signals that the project was advancing in the right direction with its market development strategy, even if time constraints prevented full implementation.

The infrastructure gap: Processing plant as market system anchor

Julia Mumbe, Value Addition Specialist, adds the physical infrastructure dimension that both Victor Opondo and Dr. Joel's accounts imply but do not name explicitly:

"If there can be a plant built that can do both seaweed and fish value addition – having the machinery – it can generate income for both communities and the project extension as well."

– Value Addition Specialist, SMC

A shared processing facility equipped with commercial-scale machinery offers a strategic solution to multiple bottlenecks within the value chain. First, it directly addresses the equipment constraints reported at sites such as Kilifi South, enabling beneficiaries to operationalize value-addition skills at scale. Second, it serves as a centralized aggregation point, ensuring a more reliable and consistent supply base for aggregators and improving coordination within the market chain. Third, it introduces a revenue stream through processing services, which can support both community-level enterprises and ongoing programme activities.

As articulated by Julia Mumbe, the facility can generate income *"for both communities and the project extension,"* positioning it not merely as an upfront capital expense but as a self-sustaining, income-generating investment. This distinction is critical for Phase 2 financing considerations. A processing facility with built-in revenue potential represents a more viable and scalable investment model than one-off, grant-funded equipment distribution, as it can support its own operational sustainability while strengthening the broader value chain.

Synthesis: The four-part market system failure and its Phase 2 solution

1. *Training without tools (Kilifi South):* Equipment, follow-up, and market access must be in place before or immediately after training. Phase 2 must sequence these together.
2. *Aggregator financing gap (Victor Opondo):* Working capital or microcredit for SMC is a precondition for consistent purchasing, which is the precondition for farmer production incentives at scale. Aggregator capitalization is a market system investment, not an operational cost.
3. *Business unit registration lag (Dr. Joel):* Registration support must begin early enough in the project cycle that units are registered and legally ready for supply agreements before the market linkage handholding window opens.
4. *Processing infrastructure absence (Julia Mumbe):* A shared seaweed and fish processing facility with commercial-scale equipment resolves the equipment gap, creates an aggregation hub, and generates revenue. This should be framed as a revenue-generating infrastructure investment in Phase 2 financing proposals.

Evidence Assessment – Value Addition and Market Linkages | Level: MODERATE-STRONG (Training Delivery); STRONG (Market Chain Failure Diagnosis)

57.21% reached in value addition training; 85.47% female share; 83.9% always or sometimes apply. Kilifi circles and Bahari CBO demonstrate post-project enterprise continuity, with equipment and market access in place. Kilifi South documents the training-without-tools failure: equipment, follow-up, and market are absent simultaneously. Victor Opondo, Dr. Joel, Dr. Benard, and Julia Mumbe converge on four distinct but interconnected market chain failures. SACCO collective market sales <5% confirms that the market architecture required for collective selling was never completed. Market chain completion, aggregator capitalization, equipment, business unit registration, and processing facility can be the future programming priorities, not additional training delivery.

Knowledge production: 86 outputs that outlast the project

The project generated 86 documented knowledge outputs across seven categories, producing a body of evidence that extends its effectiveness reach far beyond the 300 households in the endline sample. These outputs are not supplementary to the project's effectiveness, they are among its most durable outputs, because they convert field-level learning into accessible resources that subsequent programmes, government agencies, and communities can use independently.

Table 21: Knowledge Production Outputs

Output Category	Count	Selected Titles / Significance
Peer-reviewed paper	1	Kimanga et al. (2025) — gendered seaweed value chain in Mwazaro/Kibuyuni. Inserts community evidence into the permanent academic record.
Information briefs and technical reports	7	IMTA cage assembly guide; business canvas model; transformative gender training; socio-technical IMTA adoption framework; two county policy dialogue reports; MCM workshop proceedings.
Training manuals and facilitator guides	3	Women-led SACCOs manual; fish value addition manual; media engagement manual. Codify practitioner knowledge into replicable resources.
Books and booklets	2	"Opportunities for Blue Economic Empowerment and Resilience of Fisherwomen in Kenya" (146pp); Field Officer Perspectives booklet — ground-level implementation voice in the published record.
Blog posts (English and Kiswahili)	11	Mama Fatuma feminist leadership; seaweed as economic breakthrough; climate-smart coastal economies; peer-to-peer learning model. Reach policy, investor, and practitioner audiences.
Video productions	61	Full BE documentary (English and Kiswahili); IMTA cage assembly and official launch (KBC and Citizen TV); SACCO training testimonials; expert interviews; community voices.
Radio/podcast episodes	2	Radio Rahma Kilimo Baharini (Kiswahili) — reaching coastal audiences unreachable by written outputs.

Three outputs stand out as particularly significant for the project's effectiveness. First, the IMTA cage assembly information brief (2023) represents a critical technical resource. It provides the practical guidance needed by community adopters and future projects to implement IMTA systems. If widely disseminated to communities, it could have addressed the implementation follow-up gaps identified in the training component by serving as a hands-on reference manual. Second, the production of a dual-language documentary in both English and Kiswahili demonstrate a clear understanding of the importance of language accessibility in knowledge dissemination. Extending this approach to written training materials in Phase 2 presents a high-impact opportunity to improve comprehension, retention, and usability of technical content among beneficiaries.

Third, national media coverage of the IMTA launch on KBC and Citizen TV significantly expanded the project's visibility. This outreach reached policymakers, investors, and development practitioners who are unlikely to engage with technical reports, thereby enhancing institutional legitimacy and increasing the potential for policy uptake and scaling. However, the publication bottleneck identified under efficiency remains a key constraint. Budget centralization through ACTS limited sub-partners' ability to independently produce and disseminate knowledge outputs in a timely manner. This restricts the long-term effectiveness of the project's knowledge products. Phase 2 should therefore prioritize more flexible and decentralized publication funding arrangements to enable faster, multi-partner knowledge generation and dissemination from the field.

3.4 Efficiency

To what extent were project resources utilized efficiently?

Efficiency examines whether the project generated the best possible return from its investments, assessed through production system cost-benefit analysis, training application rates as a proxy for training efficiency, and market access effectiveness. The evaluation team assessed the extent to which project resources were utilized efficiently, with attention to timeliness, budget performance, cost-effectiveness of work packages, beneficiary and adoption tracking, partnership leverage, duplication risk, and overall value for money. The analysis was based on the final financial report for IDRC Grant No. 109782-001. All figures are presented in United States Dollars unless otherwise stated.

3.4.1 Timeliness and Overall Budget Performance

During the reporting period, the project spent 321,107.00 against a period budget of 413,713.90, representing a utilization rate of 77.6%. This left an unspent period balance of 92,606.90.

At the cumulative project level, the working-currency budget was 771,219.35, against cumulative expenditure of 680,232.89, leaving a balance of 90,986.46. This translates to cumulative budget absorption of 88.2%. In CAD terms, the project budget was 978,900.00, with cumulative expenditure of 912,394.75, giving a higher absorption rate of approximately 93.2% due to currency adjustment.

Table 22: Overall Budget Performance

Financial measure	Budget	Actual / Cumulative Expenses	Balance / Variance	Utilization
Reporting period performance	413,713.90	321,107.00	92,606.90	77.60%
Cumulative project performance, USD	771,219.35	680,232.89	90,986.46	88.20%
Cumulative project performance, CAD	978,900.00	912,394.75	66,505.25	93.20%

3.4.2 Budget Performance by Cost Category

The strongest absorption during the reporting period was under Research, which spent 244,058.00 against a budget of 241,618.90, equivalent to 101.0% utilization. This shows that the core implementation functions of the project were prioritized and largely delivered. Training also slightly exceeded its budget, spending 107.5%, largely due to higher use of master's students and stipends to support implementation, monitoring, learning, and investment readiness work.

By contrast, Personnel, Consultants, Evaluation, and Equipment were significantly under-utilized during the reporting period. Personnel spending stood at 28.2% of the period budget, while Consultants spent 24.2%. The financial explanations indicate that several planned consultancy, communications, monitoring, evaluation, and environmental audit functions were absorbed internally by ACTS directorates or supported by students and project staff. This reduced cash expenditure and represented a form of in-kind leverage. However, such substitutions should be clearly documented to ensure that efficiency gains are visible and auditable.

Table 23: Budget Performance by Category

Budget Category	Period Budget	Actual Expenses	Variance	Utilization (%)	Efficiency Interpretation
Personnel	70,120.00	19,805.00	50,315.00	28.2	Major under-utilization; selected roles absorbed more effort while other planned personnel lines were not fully used.
Consultants	43,327.00	10,493.00	32,834.00	24.2	Low cash absorption due to internal delivery and in-kind technical support.
Evaluation	1,204.00	0	1,204.00	0	Evaluation support reportedly absorbed through ACTS MELI and student support.
Equipment	933	0	933	0	No further equipment costs; field vehicle already procured.
Training	9,123.00	9,810.00	-687	107.5	Slight overrun linked to student stipends and practical implementation support.
Research	241,618.90	244,058.00	-2,439.10	101	Strong absorption; core implementation and partner delivery were prioritized.
Indirect costs	47,388.00	36,941.00	10,447.00	78	Indirect costs remained contained and aligned with lower overall expenditure.
Total	413,713.90	321,107.00	92,606.90	77.6	Moderate absorption during the final reporting period.

Overall, the cost structure shows that the project was not administration-heavy. Most resources were directed toward research and field implementation. However, the low use of personnel and consultants suggests that some budget lines were either overestimated, reallocated informally through staff effort, or replaced by in-kind contributions.

3.4.3 Cost-Effectiveness by Work Package and Implementation Modality

The project's cost-effectiveness varied across work packages and implementation modalities. The most efficient and balanced work package was WP3: Development of Policy and Governance Framework, which spent 91.2% of its identified reporting-period budget. This indicates good financial discipline in policy dialogues, county-level engagements, policy hackathons, and governance-related activities.

WP4: Design and Testing of IMTA spent 73.2% of the identified budget. This is a moderate utilization level. Some practical technology and production costs, such as the backyard hatchery and aquaculture ponds, were implemented, but other items such as seaweed farming materials, model cage hardware, and field travel were under-utilized. This suggests that some technical design and testing activities were implemented more selectively than planned.

WP5: Visibility and Knowledge Management had low absorption at 33.8%, mainly because several communication and dissemination functions were reportedly taken up internally by ACTS communications structures. While this created cost savings, it may also have reduced the scale of external visibility, structured dissemination, and knowledge packaging unless these outputs were fully delivered through non-cash support.

WP8: Co-Innovation, Co-Ideation, Mentorship, and Investment Facilitation also recorded low absorption at 26.8%. This is an important efficiency concern because investment readiness and enterprise mentorship are critical for translating technical pilots into sustainable blue economy business models.

Table 24: Work Package and Implementation Modality Performance

Work Package / Modality	Budget	Actual Expenses	Variance	Utilization	Interpretation
WP3: Policy and governance	12,502.99	11,404.00	1,098.99	91.20%	Strong budget discipline and balanced delivery.
WP4: IMTA design and testing	21,530.65	15,754.00	5,776.65	73.20%	Moderate absorption; some technical activities delivered, others under-used.
WP5: Visibility and knowledge	45,644.00	15,438.00	30,206.00	33.80%	Low cash absorption due to internal/in-kind support; dissemination intensity should be verified.
WP6: Evaluation/coordination support	1,204.00	0	1,204.00	0.00%	Evaluation support absorbed internally; requires documentation as in-kind support.
WP8: Co-innovation and investment facilitation	16,578.26	4,450.00	12,128.26	26.80%	Weak absorption; may have limited enterprise-readiness support.
Partner sub-grants	197,987.00	217,315.00	-19,328.00	109.80%	Strong partner implementation but with budget pressure and reallocation risk.

The table shows that the project's strongest delivery channel was partner implementation through sub-grants. Partner sub-grants accounted for a large share of expenditure and exceeded the reporting-period budget by 19,328.00. This indicates strong implementation through local and technical partners, but it also points to the need for more active budget reallocation and partner-level variance control.

3.4.4 Cost Per Beneficiary, Adoption and Equity of Reach

The financial reports shared to the evaluation team did not include verified beneficiary counts, unique participants reached, adopters, women-led enterprises supported, or disaggregated reach data. As a result, the evaluation could not calculate a reliable cost per beneficiary, cost per adopter, or cost per enterprise from the finance dataset alone.

This is an important limitation. A full efficiency analysis requires linking expenditure to final outputs and outcomes. The absence of a final beneficiary and adoption tracker in the financial report limited the ability to determine whether resources reached women, youth, and vulnerable groups at the intended depth and scale. For future programming, financial reporting should be linked to a MEAL output tracker so that every major cost centre can be assessed against reach, adoption, equity, and outcome indicators.

3.4.5 Leveraging Partnerships and Managing Duplication Risk

The Blue Empowerment project relied heavily on a partnership-based implementation model. This was appropriate given the multi-dimensional nature of the project, which combined blue economy research, IMTA testing, seaweed enterprise development, gender empowerment, policy engagement, and community mobilization.

The financial data indicated that partner sub-grants were a major delivery channel. Partner sub-grants spent 217,315.00 against a reporting-period budget of 197,987.00, equivalent to 109.8% utilization. This confirms that implementation was not centralized only at ACTS level but was substantially delivered through partner institutions and community-based structures.

Table 25: Partner Sub-Grant Performance

Partner	Budget	Actual Expenses	Variance	Utilization	Interpretation
KIRDI	47,360.00	55,745.00	-8,385.00	117.70%	Overspent due to additional design and optimization work.
Kenyatta University	31,625.00	21,600.00	10,025.00	68.30%	Under-absorption linked to activation delays and transition challenges.
KMFRI	28,535.00	29,127.00	-592	102.10%	Close to budget; good absorption.
BAHARI	90,467.00	110,843.00	-20,376.00	122.50%	Major over-absorption due to proximity to communities and transfer of field activities.
SEAMOSS	0	0	0	N/A	No reporting-period allocation recorded.
Total partner sub-grants	197,987.00	217,315.00	-19,328.00	109.80%	Strong partner delivery but uneven budget performance.

The strongest partnership leverage was observed through BAHARI, KMFRI and KIRDI, which carried substantial implementation responsibilities. BAHARI's overspending was driven by its proximity to the field and ability to support community-facing activities, workshops, meetings and implementation support. This improved responsiveness and local ownership. However, it also created budget pressure and points to a need for earlier formal reallocation where activities shift between partners.

The project also generated important in-kind leverage. Several functions that had budget allocations, including communications, monitoring and evaluation, environmental audit support, and some consultancy roles, were reportedly absorbed by ACTS directorates, project staff, and master's students. This reduced direct cash costs and contributed to implementation continuity. However, such contributions were not monetized in the financial report. Therefore, the evaluation team could not compute a formal financial leverage ratio.

The main duplication risk was not duplication of activities in the narrow sense, but rather role overlap and budget migration. Activities originally budgeted under one partner or cost line were sometimes implemented through another partner or through internal ACTS structures. This was practical and helped the project move forward, but it reduced the clarity of cost attribution. Future projects should include a live partner budget tracker that records approved reallocations, in-kind contributions, activity transfers, and delivery milestones.

3.4.6 Value for Money

The project demonstrated moderate to good value for money. The strongest value-for-money feature was that expenditure was concentrated in field-facing and implementation-oriented categories. Research alone accounted for 244,058.00, equivalent to approximately 76.0% of total reporting-period expenditure. Partner sub-grants accounted for 217,315.00, or about 67.7% of total reporting-period expenditure. This shows that a substantial share of resources was directed to technical delivery and partner-led implementation.

Indirect costs were contained at 36,941.00, representing 11.5% of total reporting-period expenditure. This is a reasonable overhead level for a multi-partner research and implementation project.

Table 26: Value for Money Assessment

VfM dimension	Assessment	Evidence from Financial Data
Economy	Moderate to good	Overall project avoided overspending; indirect costs remained contained at 11.5% of reporting-period expenditure.
Efficiency	Moderate	Direct costs accounted for 88.5% of reporting-period expenditure, but some categories were under-utilized.
Effectiveness	Partially assessable	Core research and partner implementation were strongly financed, but the finance dataset does not include results or adoption denominators.
Equity	Positive design, incomplete measurement	Budget structure reflects gender, fisher women, enterprise and community focus, but disaggregated reach and adoption data are not included.
Sustainability	Emerging but not fully costed	Investment readiness, seaweed enterprise development and partner implementation support sustainability, but WP8 absorption was low.
Leverage	Institutionally strong, financially under-documented	Internal ACTS support, student involvement and partner delivery reduced costs, but in-kind and co-financing values were not monetized.

3.4.7 Implementation Process Efficiency: Where Resources Were Lost

The implementing partner interviews surface a set of implementation process failures that constrained the project's overall efficiency in ways that the production and training data cannot capture. These are not incidental operational challenges. They represent systematic losses of project investment that reduced the return on every other component of the project portfolio. They are documented here transparently because they carry direct design implications for Phase 2 implementation architecture.

Procurement delays: The IMTA operationalization cost

Procurement delays, especially for IMTA equipment, were the single most consequential implementation efficiency failure. The floating raft loss within the first month of deployment could have been addressed by procuring HDPE pipe infrastructure as a replacement; however, procurement timelines within the project cycle prevented this. Dr. Joel confirms the operational cascade: IMTA was run in only one season, rather than the minimum of 2 required to generate comparative production data. This means the project's largest technology investment in IMTA design, testing, and community engagement failed to produce the evidence needed to justify community-scale adoption. The efficiency loss is asymmetric: the inputs (design, procurement, installation, training) were largely spent; the outputs (seasonal production data, adoption evidence) were not generated.

"We didn't get to run IMTA in at least two seasons. Procurement delays... we were not able to test it effectively."

— Implementing Partner

Partnership management: Coordination costs and capacity transitions

Partnership management required more active coordination and micromanagement than the PI anticipated, consuming time and resources that could have been deployed to technical delivery. Three specific partnership events reduced implementation efficiency:

Three partnership efficiency losses

Partner transition – SMC (grant partner to consultant): Reduced institutional accountability while maintaining technical support. The transition meant SMC could no longer be held to the same deliverable accountability framework as a grant partner, reducing the project's leverage over the market linkage component that SMC was best positioned to complete.

Chepkemboi's withdrawal – critical technology-science capacity gap: The withdrawal of the technology-science partner created a capacity gap that ACTS was forced to partially absorb, diverting coordination resources to technical functions outside the PI's core mandate. This reduced both coordination quality and technical delivery depth simultaneously, an efficiency loss that multiplied across the project's interconnected components.

Publication budget bottleneck: Budget allocation for publications channelled through ACTS created a sub-partner funding bottleneck. Partners lacked independent financial resources to fast-track publication of their component findings, reducing the project's knowledge-production efficiency and delaying the evidence base required for policy engagement.

These three partnership efficiency losses share a common structural feature: they each reduced the project's operational flexibility precisely in domains where flexibility was most needed. A partner transition that reduces accountability in the market linkage component, a capacity withdrawal that forces the PI to absorb technical functions, and a publication budget bottleneck that prevents partners from independently advancing knowledge outputs, all three reduce the system's ability to compensate for other efficiency losses through adaptive reallocation.

Business unit registration lag: Timing as an efficiency variable

The registration timeline for business units intersected fatally with the market linkage handholding window. Business unit registration is a prerequisite for supply agreements and formal buyer relationships; the time required for registration in practice exceeded the time the project allocated to the market linkage phase. This is an implementation sequencing failure rather than a design failure which means the market linkage component was correctly designed, but its timing relative to business unit registration was miscalibrated. The efficiency cost is concrete: the project invested in value addition training, aggregator relationship development, and market portal development, but could not convert these investments into completed market connections because the legal entity structure required to formalise those connections was not yet in place.

"The handholding between a business enterprise and a market was what we were never able to achieve. And we were not able to achieve it because of time, but also because the business units had to be registered first."

— Implementing Partner

Monitoring and documentation: The knowledge efficiency gap

Insufficient monitoring and documentation across multiple project components reduced the project's efficiency in a specific and recoverable way: it prevented the project from generating the evidence that would have made subsequent investments more efficient. Fish farming productivity data not collected means the cost-structure problem cannot be diagnosed with precision. IMTA production data covering only one season means comparative yield data is incomplete. Business model performance documentation across circles is partial. In each case, the missing data does not only represent an M&E failure which represents an efficiency loss in the project's own learning system that reduces the precision of Phase 2 investment decisions.

"Those fish that were being fed on both formulated and seaweed, raw seaweed, were performing very well... but still in draft format."

– Implementing Partner

"Still in draft format" characterises not just the fish feeding data but a broader documentation challenge across multiple components. A project that generates strong community-level outcomes but cannot document the precise causal pathways through which those outcomes were produced is an efficient project with an inefficient learning system. Phase 2 must correct this by building monitoring and documentation capacity as a first-order investment rather than an administrative function.

3.5 Impact

What early or emerging transformative changes are evident?

Impact addresses higher-level, transformational, and systems-level changes, specifically the "so what?" question. The survey provides evidence of direct household welfare impacts, a documented women's agency transformation reaching OECD threshold for transformational change, organic knowledge spillover, and unintended effects that require transparent acknowledgment.

3.5.1 Transformational Impact: Women's Agency – A Four-Level Analysis

The most significant impact of the Blue Empowerment Project is the depth of transformation in women's agency, reflected in shifts not only in participation and access, but in power relations, social norms, and institutional positioning as shown in Table 22. Quantitative findings indicate that 81.32% of respondents report increased influence over household economic decision-making, while qualitative evidence confirms sustained female leadership across community and institutional structures.

Unlike effectiveness-level outcomes (training, participation, access), these findings point to enduring changes in how women are perceived, how they act, and how they are positioned within households and communities. This aligns with OECD criteria for transformational impact, where change extends beyond outputs to norms and structures.

Table 27: Impact Indicators

Level	Description	Evidence	Assessment
Level 1: Participation	Surface-level inclusion	Women 70%, men 30% across all FGDs. Youth are included in training and leadership. Multiple age groups present across all sites.	STRONG — well-documented and verified by survey (65.57% female respondents)
Level 2: Access	Resources, skills, and opportunities	Training received in: business skills, value addition (fish samosa, seaweed cosmetics), financial literacy, leadership, coxswain/boat riding, social media marketing, SACCO membership, water quality monitoring.	STRONG — broad training access; equipment gap in Kilifi South limits full access to value addition
Level 3: Agency	Decision-making power	"I now can directly depend on myself to sort some household matters." "I now speak up and I can see that I am being heard." Women chairing BMUs, holding SACCO executive positions, attending training without requiring husband's permission.	STRONG — agency evidenced at household, group, and community levels across all four FGDs
Level 4: Transformation	Norms and structures changed	"Now I ride the boat... we now have a voice, we now don't fear men, we respect them." Girl child normalization of education post-pregnancy. Men accepting wives' independent income and travel. "We have ensured that my boy child and girl child know that they are the same."	MODERATE-STRONG — structural shifts documented; deeper transformation in Kwale FGDs than Kilifi South, where change is more nascent

3.5.2 Systems-Level Impact: Policy, Technology Pioneering, and Organic Diffusion

Beyond household and individual outcomes, the Blue Empowerment Project generated significant systems-level impacts, representing its highest-order contribution to Kenya's blue economy. These impacts can be grouped into three interrelated domains: policy system influence, technology pioneering, and organic knowledge diffusion. Together, they demonstrate that the project not only affected beneficiaries but also influenced institutions, technologies, and knowledge systems beyond its immediate scope.

Policy system influence: shaping the enabling environment

The project contributed meaningfully to policy processes at national and county levels, embedding its approaches and evidence into governance structures. Participation in the national Blue Economy Technical Working Group (TWG) positioned project insights within decision-making spaces that shape aquaculture and fisheries policy.

At the county level, contributions to gender policies in Kilifi and Kwale, as well as to cooperative development frameworks, integrated the project's model of women's empowerment, particularly through SACCOs, into broader economic planning structures. In addition, the project informed the development of a national seaweed policy, further extending its influence into sector-wide planning.

These contributions represent a critical systems-level achievement: the project helped shape the enabling environment for future interventions, ensuring that lessons on gender inclusion, collective action, and blue economy livelihoods are reflected in policy frameworks.

Importantly, qualitative findings and interviews also indicate broader institutional shifts. Engagement with national stakeholders and development partners has influenced how institutions position themselves in relation to blue economy technologies. Signals of intent by government actors to adopt and scale IMTA in future programming suggest that the project contributed not only to knowledge generation but also to institutional alignment and forward planning.

Technology pioneering: establishing IMTA as a viable pathway

One of the most analytically significant impacts of the project is its role in pioneering IMTA as a coastal technology in Kenya. Although IMTA adoption at the community level remained limited, the project successfully established a proof of concept, demonstrating the feasibility of integrating fish and seaweed systems under local conditions.

This pioneering role has already triggered replication and adaptation beyond the project's direct scope. Subsequent initiatives, including those supported by development partners such as WorldFish, Japan International Cooperation Agency (JICA), and Kenya Fisheries Service (KeFS), have begun adopting similar approaches along the Kenyan coast. In addition, the IMTA concept has been extended to other ecological contexts, such as rice-based systems in Western Kenya, demonstrating its adaptability across regions. These developments indicate that the project's impact extends beyond direct beneficiaries to influence technology pathways at the national scale. By demonstrating viability, the project has reduced uncertainty for future investments and created a reference point for scaling.

Documented technology pioneering outcomes (Outcome Harvesting)

IMTA concept replicated by Wild Fish and JICA at Kijiweni beach: BE pioneered IMTA at the Kenyan coast; the proof-of-concept created an adoption pathway that subsequent projects are now following. This is a systems-level impact that extends the project's technology reach far beyond its direct beneficiary group.

IMTA Health project – IMTA in rice paddies, Western Kenya: KIRDI extended the IMTA concept nationwide, applying it to rice paddy farming in Western Kenya, reaching the lake-region youth and women. BE demonstrated IMTA viability; KIRDI translated this into a different geographic and ecological context. This represents national technology diffusion, an unintended positive impact of substantial scale.

Seaweed production at 185–285 tonnes vs. 16,000-tonne EEZ potential: BE's documented production creates the investment evidence base for the Exclusive Economic Zone's full seaweed production potential. Current production (185–285 tonnes) is approximately 1.7% of the EEZ's potential, establishing the benchmark against which further programming and investment scaling can be assessed.

The project also contributed to building an evidence base for the blue economy. While current seaweed production levels remain far below the estimated national potential, the data generated through the project provides a benchmark for future scaling efforts. This positions the project as an early-stage catalyst in unlocking broader sector potential.

Organic knowledge diffusion: from project to community systems

A further systems-level impact is the extent to which knowledge generated by the project has moved beyond formal project channels and entered community knowledge systems. Quantitative findings show that a notable proportion of respondents first learned about IMTA through peer networks, BMU meetings, and SACCO interactions, rather than direct project training. This indicates that knowledge is being shared and reproduced through existing social and institutional structures. This form of diffusion is significant because it operates independently of project facilitation, suggesting that the project has contributed to the development of a self-sustaining knowledge ecosystem. Communities are not only receiving knowledge but also actively transmitting it, extending the intervention's reach beyond its original design. Institutional diffusion is also evident. For example, community groups have begun forming external partnerships, such as agreements with hatcheries for aquaculture inputs, reflecting increased visibility and credibility as knowledge hubs. In addition, emerging engagement by county actors in promoting blue economy activities indicates that project knowledge is influencing broader institutional behaviour.

A particularly notable signal of impact is the emergence of intergenerational transfer, as younger individuals engage in blue economy activities through networks and opportunities created by the project. While still limited, this suggests the potential for longer-term sustainability of project outcomes beyond the initial beneficiary group.

Knowledge Production: Building a Permanent Evidence Base

The Blue Empowerment Project generated a substantial body of knowledge outputs, totalling 86 documented products, representing a significant systems-level impact that extends beyond direct project beneficiaries. While these outputs are not captured within endline survey indicators, they contribute to a permanent evidence base that will influence blue economy programming, policy, and research beyond the project lifecycle. The impact of this knowledge production operates through multiple channels, each targeting a distinct audience and serving a different function within the broader system:

Table 28: Knowledge Channel Outputs

Knowledge Channel	Outputs	Impact Mechanism
Peer-reviewed academic literature	1 paper (Kimanga et al., 2025)	Inserts community evidence into the global academic record – influences future researchers, programme designers, and funders who will never visit Mwazaro or Kibuyuni
Technical practitioner resources	7 information briefs; 3 training manuals	Codifies field-level implementation knowledge into replicable resources for subsequent programmes. IMTA cage assembly brief provides the technical precedent; SACCO manual converts SACCO development experience into transferable curriculum
Policy audience publications	2 county dialogue reports; 1 multi-criteria mapping report; 146-page edited volume	Reaches county government officials, development partners, and national policy makers with structured, validated evidence that advocacy documents cannot achieve
National mainstream media	11 blog posts; 2 Radio Rahma episodes; Nation Africa article; KBC and Citizen TV IMTA coverage	Reaches investors, policymakers, and development practitioners through channels they actually use – KBC and Citizen TV coverage of the IMTA launch signals national institutional legitimacy
Community and visual documentation	61 video productions (English and Kiswahili); 21 photo galleries; field officer perspectives booklet	Preserves ground-level implementation evidence; the Kiswahili documentary reaches coastal communities directly; field officer perspectives insert practitioner knowledge into the published record

Two outputs carry impact significance beyond their category. The Field Officer's Perspective booklet (Meali et al., 2025) is analytically distinctive: field officers are closest to communities throughout implementation and routinely absent from published records. This booklet inserts their ground-level knowledge permanently. The dual-language documentary, with English and Kiswahili narration of the same film demonstrates that the project understood the language-accessibility principle in its highest-visibility output. Extending this principle to all training materials in Phase 2 would convert a demonstrated capability into a consistent practice.

The Radio Rahma Kiswahili episodes are the knowledge production output most directly relevant to the 0% radio/TV IMTA knowledge source finding in the impact section. The infrastructure to reach coastal radio audiences exists; the project built it. The gap is a sustained radio strategy embedded in a community knowledge dissemination architecture rather than a one-time production. Phase 2 can activate this infrastructure rather than build it from scratch.

3.6 Sustainability

To what extent are project outcomes likely to be sustained? Will the benefits last?

To what extent are institutional systems strengthened for long-term blue economy development?

Sustainability examines whether the gains achieved by the Blue Empowerment Project will endure beyond the project lifecycle. In line with OECD criteria, this involves assessing whether the necessary conditions for continuity are in place across financial systems, institutional structures, community capacity, enabling policy, and external risk factors.

The evidence indicates a mixed but structured sustainability profile, characterized by four concurrent realities: strong financial self-sufficiency in selected livelihood pathways (notably seaweed farming and value addition in some sites); emerging but not yet fully operational institutional systems (particularly SACCOs); continued dependence on external support for training, inputs, and credit, and significant structural threats beyond project control.

3.6.1 Financial Sustainability

Financial sustainability is best understood through the performance of the different production systems supported by the project. The evidence shows that these systems vary significantly in their ability to continue operating without project support. This variation is critical, as it demonstrates that sustainability is not uniform across the livelihood portfolio and must therefore be approached differently in future programming.

Table 29: Project Production Systems

Production System	Net income/cycle	Annual potential	Post-project viability	Primary sustainability risk
Seaweed farming	+9,490 ✓	74,971	HIGH – financially self-sustaining	Climate variability; deepwater shift required; port expansion pollution threat
Value addition (seaweed/fish)	Positive where equipment exists	Variable	MODERATE – enterprise active in Kilifi circles and Bahari CBO	Equipment absent in Kilifi South; market chain incomplete; follow-up support absent
Fish farming (cage/pond)	-4,430 ⚠	-19,492	LOW – mean net loss; structural cost problem	Input costs relative to market price; co-design failure in Tushirikiane ponds unresolved
IMTA (integrated)	+1,670 ✓ (early adopters)	+10,521 (early adopters)	CONDITIONAL – financially viable where infrastructure exists	Capital access; HDPE infrastructure; licensing clarity; only one season demonstrated

The findings provide a fundamental insight: not all project-supported livelihood pathways are equally sustainable. Seaweed farming stands out as the most stable and reliable system. It generates consistent positive returns and operates with relatively low input costs, making it accessible to a wide range of beneficiaries. Value addition shows promise, particularly where equipment and market access are available, but its sustainability is uneven across sites. While Fish farming, in contrast, presents a clear financial sustainability challenge, with consistent net losses indicating a structural cost-revenue imbalance. And IMTA sits between these systems, technically promising but not yet fully demonstrated or accessible at scale, making its sustainability conditional rather than assured. This differentiation is important because it shows that sustainability is pathway-dependent, and future investments must prioritize systems that are already viable while addressing constraints in weaker ones.

Seaweed farming is the sustainability anchor of the project's livelihood portfolio. Post-project observations provide strong confirmation:

"The Kilifi SACCOs are still making seaweed-based and cosmetic products and doing quite well. Bahari CBON are also continuing. Life must continue – the project is gone; the money does not go with it."

– Value Addition Specialist, SMC

This reflects a critical transition from project dependency to financial independence. Beneficiaries are no longer relying on external support but are generating income through their own activities. This is reinforced by additional qualitative:

"We are grateful because, although we received support in the early years, we were later left to operate on our own. We have made progress independently. What we have here is income from our own sales, not donor support."

– SHG Leader, Kilifi North

These findings indicate that seaweed-based enterprises have internalized business practices and a market orientation, enabling them to operate as self-sustaining economic units. This represents the strongest form of financial sustainability observed in the project.

In contrast, fish farming presents the most significant financial sustainability challenge. The average net loss of KES. 4,430 per cycle indicates that, under current conditions, the activity is not economically viable for many participants. This raises an important distinction: Communities are willing to continue, but they may not be able to do so profitably. This is particularly evident in areas affected by implementation challenges, such as the Tushirikiane pond system, where design issues reduced production capacity. As a result, some households are experiencing ongoing financial losses. At the same time, qualitative insights suggest that this pathway is not beyond recovery:

"They'll be financially sustainable, but they need a little boost to go commercial. I'm positive with Kilifi because they are more business oriented."

– Value Addition Specialist, SMC

This indicates that fish farming has potential but requires targeted support, particularly in improving cost structures, production systems, and market access.

Value addition represents a moderately sustainable pathway, but only where enabling conditions are present. In sites with access to equipment and markets, beneficiaries are actively producing and selling value-added products. However, in sites lacking these conditions, the benefits of training remain unrealised. Similarly, IMTA shows early positive returns but remains conditional. Its sustainability depends on access to infrastructure, capital, and technical support. Without these, adoption and continuation are unlikely.

3.6.2 Institutional Sustainability: Architecture Established, Operationalization Fragile

The BE Project has established a meaningful foundation for institutional sustainability, particularly through the creation and strengthening of women-led SACCOs, engagement with county cooperative systems, and participation in national-level policy platforms. These elements collectively form an institutional architecture that did not exist prior to the project. However, the evidence indicates that, while this architecture is in place, its operational capacity remains fragile, particularly at the SACCO level. Four SACCOs have been established, each with substantial membership and demonstrated commitment through share contributions and registration processes. In addition, the project has engaged with County cooperative frameworks and contributed to policy discussions at the TWG level. The proposed Blue Empowerment Fund further signals an emerging institutional mechanism to support continuity. Despite these gains, the SACCOs, the most critical institutional mechanism for long-term sustainability, remain at an early stage of maturity, largely in the registration and formation phase rather than fully operational institutions capable of delivering financial and market services.

Qualitative findings and interviews indicated a clear and consistent pattern: communities demonstrate strong commitment to sustaining SACCOs but acknowledge that operational systems are not yet fully in place.

"When some project ends, the groups also tend to collapse... for us, we intend to continue with the SACCO. It will not end. We will continue."

— Adult Female Respondent, Jitihada SACCO FGD

This reflects a deliberate departure from past experiences of project dependency and group dissolution. At the same time, other respondents provide a grounded assessment of current readiness:

"Not yet. Our SACCO is still forming, and we need to streamline the records, bank statements, meeting minutes."

— Tushirikiane SACCO FGD Member, on Operational Readiness

The county cooperative system offers an important yet underutilized pathway to strengthen SACCO sustainability. For example, the Kilifi County cooperative fund provides access to zero-interest financing, which could significantly support SACCO capitalization and enable lending functions. However, uptake of this opportunity remains limited. One of the key constraints identified is SACCOs' ability to mobilize sufficient membership and meet operational thresholds. Additionally, the IMTA Platform Management Committee in Kwale led by women and embedded from project design, demonstrates that institutional sustainability can be strengthened when governance structures are established early and intentionally. Similarly, the Kilifi North SHG's agreement with a hatchery for prawn brooders represents an important institutional outcome. This relationship was not directly created by the project but emerged from the group's increased visibility and credibility. It reflects a shift toward independent institutional linkages and partnerships, which are critical for long-term sustainability.

3.6.3 Training and Knowledge Sustainability: Provider Dependency and the Manual Gap

One of the most structurally revealing findings on sustainability is the relationship between training demand and training provision. The evidence shows a strong and direct dependency: 86.77% of respondents identified continued training and technical advice as their primary sustainability need, while 86.96% of adopters attributed their adoption of technologies to the project's training. Taken together, these figures describe a dependency loop, the project successfully generated demand for skills and knowledge but also became the dominant provider of that knowledge. At project close, the demand remains high, but the supply is withdrawing, as shown in Table 25. This creates a critical sustainability gap.

Table 30: Priority Sustainability Support Needed

Priority Sustainability Support Needed	Respondents	Percent (%)
Continued training and technical advice	223	86.77
Improved infrastructure	133	51.75
Input supply (seeds, equipment)	114	44.36
Access to credit and financial services	109	42.41
Better market access and higher prices	94	36.58
Strengthening SACCOs and groups	75	29.18
Government policy support	56	21.76

This dependency should not be interpreted as a failure of capacity building. On the contrary, it reflects the project's success in creating knowledge demand and driving adoption. However, because the project remained the primary provider of training across sites, alternative training systems were not fully developed in parallel. As a result, sustainability now depends not on continuing project-led training, but on transitioning to a diversified training ecosystem. Further, qualitative findings and interviews indicated that alternative knowledge channels already exist within communities. Peer learning, BMU meetings, and SACCO interactions collectively account for a substantial share of knowledge transmission, particularly for technologies such as IMTA. These mechanisms operate independently of the project and represent an organic knowledge infrastructure. While not yet fully structured, they provide a strong foundation for sustainable learning systems. Strengthening and formalizing these channels offers a practical pathway to reducing dependency on external training provision.

A critical, immediately addressable sustainability gap concerns the lack of distribution of training materials. Although the project developed several technical manuals, these were not consistently made available to community members for ongoing reference.

"The manuals are with us. They are not with them. When it comes to referencing, where are they going to reference?"

— Implementing Partner

This highlights a disconnect between knowledge production and knowledge access. Without reference materials, communities are limited in their ability to retain, apply, and adapt knowledge independently after the project ends. Existing materials, including manuals on SACCO management, value addition, and communication, represent a valuable resource that remains underutilized. Translating these materials into Kiswahili and distributing them widely would significantly strengthen knowledge sustainability at relatively low cost. This is particularly important given that communities have explicitly requested local-language materials, and the project has already demonstrated the importance of language accessibility through its Kiswahili communication outputs.

Training sustainability is closely linked to the sustainability of gender transformation outcomes. Qualitative evidence consistently indicates that gains in women's agency, such as increased confidence, participation, and leadership, are reinforced through continued engagement, mentorship, and economic activity. Without ongoing support and learning opportunities, these gains may weaken over time. As highlighted;

"My only worry would be with all this advocacy, and now that the project has come to an end and maybe there is no mentorship, they can slide back into being dominated by men again."

— Implementing Partner

This reflects a broader sustainability concern: social and behavioural change requires reinforcement. Where economic and institutional systems are not fully stabilized, there is potential for reversion to previous norms.

4. SUMMARY OF EVALUATIVE JUDGEMENTS

Table 31: Evaluation Judgement by OECD DAC Criteria

Criterion	Rating	Key Quantitative Evidence	Qualitative Insight	Primary Action
Relevance	SUBSTANTIAL	95.97% ocean access; 0% female ownership of boats/engines; 34.33% seaweed lines	Cultural norms enforce exclusion; women confirm project addressed real lived constraints	Deepen asset transfer beyond seaweed activities
Coherence	MODERATE	86.36% learn via BE; BMU/peer/SACCO carry 60%+ spillover; govt training <10%	TWG membership and county policy wins at senior level; weak operational govt delivery	Build county government as co-training partner; activate mass media
Effectiveness	SUBSTANTIAL	78.75% trained; 84.25% more reliant on BE; IMTA adoption gap 30pp	English-only materials; one-off training without mentorship; IMTA is capital barrier not knowledge gap	Close IMTA adoption gap through capital access; Swahili materials
Efficiency	PARTIAL	Seaweed +KES 9,490/cycle; fish -4,430/cycle; SACCO sales <5%	Aggregator lacks working capital; co-design failure in ponds; market chain incomplete	Activate collective sales; address the fish farming cost structure
Impact	SUBSTANTIAL	73.3% better income; 81.3% more agency; 44.69% gained assets	Housing improved; new enterprises; leadership won; "I now tell my husband we are the same"	Address 9.52% worse-off group; build on transformational agency shift
Sustainability	PARTIAL	86.77% need continued training; SACCO credit gap -8.47pp; fish net loss	Grant mentality risk; port expansion threat; all SACCOs at shares-only phase	Capitalise SACCOs; diversify training; demarcate aquaculture zone

5. CROSS-CUTTING LESSONS FOR FUTURE PROGRAMMING

Lesson 1: Training design must change before more training is delivered

High application rates for cage management (80.3%) and governance (80.7%) training confirm that when training design is right, uptake is strong. The structural problems, such as English-only materials, one-off delivery, theory-heavy content, and no mentorship follow-up, are known and can be corrected. Phase 2 training should be in Swahili, practical-first, and include structured mentorship handholding. Materials must be distributed to communities, not retained by implementing partners.

Lesson 2: IMTA adoption requires capital solutions, not more training

The 89.6% IMTA knowledge base is a significant project achievement. The 12.37% adoption rate is not a knowledge failure but a capital, inputs, and licensing failure. Phase 2 must address these structural adoption barriers directly: SACCO capitalization for IMTA start-up loans, input supply chain development, and regulatory clarity on licensing requirements.

Lesson 3: Co-design is non-negotiable for technology implementation

The experience in Kwale clearly illustrates the consequences of insufficient participatory design. The original plan for three ponds yielded only 1.5 usable ponds, and additional losses occurred during the transport of fingerlings from Kilifi, resulting in high mortality. This outcome was compounded by the fact that technical designs were developed largely by engineers without adequately incorporating community knowledge and local conditions.

This case demonstrates that bypassing participatory design can lead to inefficiencies, resource losses, and reduced infrastructure functionality. It highlights the importance of integrating community input at the design stage to ensure that interventions are contextually appropriate, operationally viable, and more likely to be sustained.

Lesson 4: Market linkage is the missing link, and it requires capitalization, not just facilitation

Value addition training was successfully delivered, but the corresponding market ecosystem for value-added products remains underdeveloped. While beneficiaries acquire and apply processing skills, the lack of structured, reliable market outlets has limited the commercial impact of these efforts. This is reflected in the fact that SACCO-facilitated collective sales account for less than 5% of overall market access across all production systems.

The core constraint lies within the aggregation layer of the value chain. The primary aggregator, SMC, lacks sufficient working capital to purchase consistently from farmers. This undermines production incentives, weakens collective marketing through SACCOs, and leaves value addition activities without a dependable route to market.

This finding points to a clear and actionable intervention. Market linkage efforts should move beyond facilitating connections to strengthening aggregators' financial capacity. Capitalizing the aggregator function is essential to stabilize demand, enable consistent purchasing, and unlock the full value of both production and value addition training investments.

Lesson 5: The agency gains are real but fragile without income

The 81.32% reporting increased household decision-making influence is the project's most significant achievement. But implementing partners uniformly warn that these gains are fragile without post-project income continuity and mentorship. Gender transformation without economic sustainability reverts. The Blue Empowerment Fund's transition from grant to commercial mechanism is therefore not an administrative task, but a primary condition for protecting the project's most important achievement.

Lesson 6: Environmental threats require immediate government action

The port expansion threat to the Kibuyuni aquaculture ecosystem identified by KIRDI is not on the project's radar, based on community-level evidence — but it is real and potentially existential. The demarcation of the Chagamwe-Kibuyuni zone as a protected aquaculture area must be elevated to an immediate government advocacy priority before the Phase 2 investment is threatened by irreversible pollution.

Lesson 7: Financial management and implementation planning must support sustainability

For future programming, the project should strengthen four areas: first, align financial reporting with output and beneficiary tracking; second, document in-kind and partner contributions in monetary terms; third, apply earlier budget reallocation where partners under-absorb or over-absorb; and fourth, ensure that enterprise development, adoption support and investment readiness are adequately resourced through to project closure.

6. MOST SIGNIFICANT CHANGE NARRATIVES

The following voices, drawn from FGDs and KIs, represent the most significant change narratives in the qualitative dataset. They are presented as the human face of the quantitative findings.

"Before I'd sit and wait for my husband and with constant begging there still was no money he gave. Through the project and getting into businesses, I now can directly depend on myself to sort some household matters."

— Adult Female Respondent, Jitihada SACCO FGD, Kwale

"Before when a young girl got pregnant in our community, it was as if her life was destroyed. But now, she gives birth with no shame and continues with her studies."

— Adult Female Respondent, Jitihada SACCO FGD

"My children were deep in the village and in poverty. With the project's knowledge and my mind opening, I brought my children here, where I stay, which is better than where they were."

— Youth Female Respondent, Jitihada SACCO FGD

"We were able to purchase land as a group... our sustainability is strong. What we have here is income from our own sales, not donor support."

— SHG Leader, Kilifi North

"One of our field officers was having a session at COP... she was present and pitched the work."

— Implementing Partner

REFERENCES

- Béné, C., Bakker, D., Chavarro, M. J., Even, B., Melo, J., & Sonneveld, A. (2021). COVID-19 and food security: Examining the evidence from a food systems perspective. *Food Security*, 13(3), 589–609. <https://doi.org/10.1007/s12571-021-01138-0>
- CGIAR. (2022). Gender equality and social inclusion in fisheries and aquaculture: A framework for action. CGIAR. <https://www.cgiar.org>
- Chepkoech, W., Mungai, N. W., Stöber, S., & Lotze-Campen, H. (2021). Understanding barriers to implementation of climate-smart agricultural practices among smallholder farmers: The case of Kwale County, Kenya. *Environment, Development and Sustainability*, 23(2), 2485–2508. <https://doi.org/10.1007/s10668-020-00637-4>
- Food and Agriculture Organization of the United Nations. (2020). The state of world fisheries and aquaculture 2020: Sustainability in action. FAO. <https://doi.org/10.4060/ca9229en>
- Government of Kenya. (2016). Kwale County: 2016 long rains food security assessment report. ReliefWeb. <https://reliefweb.int/attachments/c5329ad5-83a0-3d36-838a418b8080c54b/Kwale%20County%20LRA%202016%20Report.pdf>
- Kenya Marine Fisheries and Socio-Economic Development Project. (2020). Kenya marine fisheries and socio-economic development project report. KEMFSED.
- Kenya Marine Fisheries and Socio-Economic Development Project. (2023). Coastal fisheries governance and gender inclusion report. KEMFSED.
- Kenya National Bureau of Statistics. (2019). 2019 Kenya population and housing census. Volume I: Population by county and sub-county. KNBS. <https://www.knbs.or.ke/download/2019-kenya-population-and-housing-census-volume-i-population-by-county-and-sub-county/>
- Kimanga, F., Ladan, L., Mirera, D., Maundu, A., Moyoni, H., Bironga, C., & Onyango, J. (2025). Gendered-Value Chain Opportunities and Challenges in Seaweed Aquaculture: The Changing Gender and Socio-Economic Dynamics in Mwazaro and Kibuyuni Villages, South Coast Kenya. *Multidisciplinary Journal of Technical University of Mombasa*, 4(1), 1-17.
- Meali, M., Nazi, B., Madzitsa, N., Kopa, A., Kondo, M., Onyango, J., Simiyu, B., & Wainaina, R. (2025). Field officer's perspective on women empowerment in the blue economy sector at the coast of Kenya: ACTS Press Nairobi Convention Secretariat. (2022). [Full report title]. Nairobi Convention Secretariat.
- Organisation for Economic Co-operation and Development. (n.d.). DAC criteria for evaluating development assistance. OECD. <http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>
- Republic of Kenya (RoK, 2023). Strategic Plan 2023 – 2027: Ministry of Mining, Blue Economy and Maritime Affairs. State Department for Blue Economy and Fisheries.
- United Nations Development Programme. (2018). [Kilifi County/coastal Kenya development report]. UNDP.
- UNEP (2022). Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean Region. <https://www.nairobiconvention.org/>
- Zewdie, M. C., Magondou, E., Bottema, M., Njogu, L., & Yossa, R. (2025). Market Supply and Demand Dynamics of Coastal and Marine Products in Kenya: A Mixed Study. <https://worldfishcenter.org/>

ANNEX

Annex 1: Detailed Theory of Change

Project Objective	High-Level Result Area	High-Level Outcome Indicators	High-Level Target Impact
To profile and document gender-responsive challenges, potentials, and opportunities for commercial and sustainable adoption of fish-seaweeds IMTA for economic development of coastal fisher communities.	Economic barriers, gaps, and opportunities to women's empowerment are identified and documented,	Improved understanding of IMTA enablers on the Kenyan coast.	Increased knowledge base on opportunities and potential for IMTA to empower women in the Kenyan coast, and the WIOMSA region.
To map socio-technical pathways that can support enabling policies, technology uptake, and governance frameworks for IMTA adoption and women fisherfolk empowerment.	Increase in the allocation of funds by state and non-state agencies to support women in fish and seaweed farming and related enterprises.	Improved awareness of women's empowerment, choices, voice, and power to engage in economic development in the blue economy sector.	Improved opportunities and access to gender-inclusive employment and enterprise development in the fish and seaweeds value chains.
To design, set up, test, and optimize gender-transformative fish-seaweeds IMTA solutions for socio-economic empowerment and COVID-19 and climate change resilience of fisher women.	Increase in the number of women with access to and earning a living from the ocean and fishery resources.	Increase in the number of women involved in seaweeds and fish farming.	Increased incomes for women in the Blue Economy sector.
	Improved tonnage of fish and seaweeds available to women for trade among the target Beach Management Units.	Establishment of IMTA farms and increased production of seaweeds and fish.	Higher diversity of climate change-adapted opportunities for year-round economic engagement of fisher women.
	Increase in the number of women-led enterprises in the seaweeds and fish value chains.	Increase in the diversity and number of enterprises in the seaweeds and fish value chains.	Diversified options for COVID-19-resilient means of livelihood among coastal fisher households
To promote knowledge translation, dissemination, and learning for IMTA systems upscaling and climate change and COVID-19 response strategies in Kwale and Kilifi counties.	Increase in the adoption of climate-smart and COVID-19 resilient IMTA technology for fish and seaweed production for better livelihoods.	More stakeholders are involved in the seaweeds and fish value chain.	Increased engagement of women in leadership positions in seaweeds and fish value chains.
	Higher Multi-stakeholders' involvement in policy advocacy and capacity building for women's empowerment.	Interest in the project's technological approach from the private sector	Increased partnership or alliance with the private sector.
		Interest in IMTA models by the county governments of Kwale and Kilifi	Promotion and funding of IMTA systems by county governments blue economy enterprises



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