Economic Recovery to the Impact of Covid-19 on Agri-food Value Chain in Kenya project

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Mid-term Evaluation Report

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By: Environomica Consulting Ltd

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Mid-term Evaluation

This report is a product of Environomica Consulting authored by the consultants Mr. Marco De Milato, Mr Michele Galli, and Dr David Juma, pursuant to contract order from AVSI signed on August 2024, for the project *Economic Recovery to the Impact of Covid-19 on Agri-food Value Chain in Kenya Project* AID012590/05/6.

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About the authors

Environomica Consulting (ENV) is a collective of experts, consultants and activists committed to improve the living conditions of local communities in developing and fragile contexts by promoting more sustainable and inclusive livelihoods. The ENV evaluation team for this project is comprised of three associated consultants with complementary and extensive international and field experience.

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Acronyms

ENV	Environomica Consulting
EU	European Union
FGD	Focus Group Discussion
GAM	Global Acute Malnutrition
GAP	Good Agronomic Practice

HDI	Human Development Index
KES	Kenya Shillings
KI	Key Informant
KII	Key Informant Interviews
M&E.	Monitoring and Evaluation
MAM	Moderate Acute Malnutrition
MEAL	Monitoring, Evaluation, Accountability and Learning
MTE	Mid-term evaluation
NDMA	National Drought Management Authority
NRM	Natural Resource Management
OVIs	Objectively Verifiable Indicators
SAM	Severe Acute Malnutrition
SPSS	Statistical Package for Social Science
ToC	Theory of Change
TOR	Terms of Reference
ToT	Training of trainers
UN	United Nations
WHO	World Health Organization

Currency equivalent, weights and measures

Currency Equivalent

Currency Unit	-	Kenya Shillings (KES)
USD 1.00	-	KES 120
EUR 1.00.	-	KES 143

Weights and Measures

1 Kilogramme (Kg) - 2 204 lb.

1,000 kg - 1 Metric Ton (MT)

1 Kilometre (Km) - 0.62 Mile

1 metre (m) - 1.09 yards

1 square metre (m2) - 10.76 square feet

1 acre (ac) - 0.405 hectare (ha)

1 hectare (ha) - 2.47 acres

Executive summary

1. The midterm evaluation for the Economic Recovery to the Impact of Covid-19 of Agri-food Value Chain in Kenya Project, funded *by the* Italian Agency for Development Cooperation –AICS, was undertaken in the month of September, 2024, to (1) Assess level of achievement of project objectives to provide the donor and implementing agencies with evidence-based conclusions and recommendations for informed decision making and (2) evaluate the project in terms of relevance, timeliness, sustainability, gender mainstreaming, efficiency, and effectiveness thus far.
2. A total of 584 HHs interviews were collected, of which 52% (304) were women and 48% (280) were male respondents. Further desk review and qualitative interviews were conducted with key value chain stakeholders to complement and triangulate the information gathered. In total, nine (9) KIIs were conducted by the ENVIRONOMICA consultants, and six (6) FGDs, were done, reaching 60 participants. The FGD comprised of 10 members (5 women and 5 men).

Summary of key findings

Table 1: Summary of the project rating.

CRITERION	Relevance	Effectiveness	Efficiency	Sustainability	Impact	Overall performance
1. Highly Satisfactory						
2. Satisfactory						
3. Moderately Satisfactory						
4. Moderately Unsatisfactory						
5. Unsatisfactory						
6. Highly Unsatisfactory						

RELEVANCE

3. The project conducted comprehensive studies to assess the needs and opportunities within targeted communities, including a commercial feed assessment by the University of Embu and Chuka University. The study revealed concerns about feed quality, especially protein content and high aflatoxin levels. Another study on the dairy value chain identified actors but no networking platforms and opportunities in fodder production and commercial feed. It concluded that farmers need 2-3 cows to break even. These findings, along with a baseline survey, provided crucial insights into the challenges faced by the target communities, which shaped the project's implementation strategy.

4. In the MTE, dairy production challenges were ranked. The high cost of farm inputs was the most significant issue, followed by price fluctuations, limited land, unpredictable weather, poor input services, and pests. Weather issues, particularly flooding in early 2024, disrupted fodder production and feed availability. In Meru County, urbanization worsened water access, which prompted the project to implement drought-tolerant fodder varieties and offer inputs on credit through cooperatives.
5. Agriculture producer groups reported significant challenges, with 50% citing milk price fluctuations, especially in Embu and Tharaka Nithi due to unreliable milk processors. Limited storage and cooling capacity, affecting 31% of groups, resulted in milk wastage. The project's Matching Fund aims to increase chilling capacity to address this. Other challenges included low youth involvement and marketing difficulties, particularly in Tharaka Nithi, where inconsistent buyers made stable sales channels difficult.
6. These findings underscore the need for continued support to address market-related challenges, particularly in processing, price stabilization, and youth involvement in the dairy sector.
7. The project is well-designed with a clear theory of change, focusing on improving socio-economic conditions and recovering pre-COVID-19 production levels. It encourages investment in the dairy value chain, promotes climate-smart technologies, and has led to increased milk production, group membership, and better climate resilience.
8. The project has emphasized gender sensitivity, with economic and leadership benefits for women, despite barriers like societal norms limiting their financial control. Gender-responsive measures, including training on governance and the 1/3 gender rule, have increased female leadership in agricultural producer groups. This has strengthened group governance and promoted inclusive development. Women's involvement in household decision-making has also grown, though cultural barriers persist. The project uses gender-disaggregated data in its M&E framework, with recommendations for strengthening gender-specific M&E tools and appointing a gender focal point.
9. The Project has also established strong partnerships with county departments such as Livestock, Agriculture, Cooperatives, and KDB, leveraging their resources and expertise. Collaborating with the National Agricultural Value Chain Development Project (NAVCDP), the project has enhanced household incomes across various value chains, improving economic resilience.
10. Aligned with national and international policy frameworks such as SDGs, Vision 2030, and the Constitution of Kenya, the project has contributed to advancing the national agricultural agenda. It supports the County Integrated Development Plan (CIDP), focusing on sustainable agriculture and livestock production. The project has supported infrastructure development, capacity building for dairy farmers, and complemented national efforts to combat community vulnerabilities and resource over-exploitation, aligning with the

Agricultural Sector Transformation and Growth Strategy (ASTGS, 2019). Specifically, it supports SDGs 2, 4, 12, and 13.

EFFECTIVENESS

11. RESULT 1: The project aimed to restore and improve dairy milk and income levels for small producers, focusing on both dairy cows and goats. It targeted a 70% increase in dairy cow milk productivity, from 7.8 liters per cow/day to 12 liters per cow/day, and a 100% increase in dairy goat milk productivity, from 1.4 liters to 3 liters per goat/day. At mid-term evaluation, dairy cow productivity had increased by 33%, reaching 10.4 liters per cow/day, while dairy goat productivity saw a modest 6% increase to 1.48 liters per goat/day.

12. In Meru County, dairy cow productivity was notably higher (12.9 liters/cow/day) compared to Embu and Tharaka Nithi. The improved milk production in Meru was attributed to better extension services, breed improvement, and animal health systems. The project contributed to this by providing fodder, seed, and silage-making inputs, enhancing fodder conservation and zero grazing practices. Households typically own an average of three cows, with two being heifers. Daily milk production per household averaged 13.1 liters, leading to potential income of KES 615.7/day or KES 224,730 annually, with milk prices ranging from KES 46-49 per liter.

13. Dairy goat ownership was lower, with only 14% of respondents owning goats, and the highest proportion in Embu. Dairy goat milk productivity increased by 6%, but only 6% of households sold goat milk, indicating under-commercialization. However, goat milk prices were 77% higher than cow milk prices, suggesting untapped potential for goat milk commercialization. The project's interventions for dairy goats were limited, focusing mainly on fodder production, but the study recommends greater investment in goat production to fully exploit this market.

14. The project also aimed for 70% adoption of at least two climate-smart technologies. By MTE, 66% of participants had adopted these practices, up from 21% at baseline, a 45% increase. Water harvesting and fodder preservation were the most widely adopted technologies. In Tharaka Nithi, 62% of households practiced water harvesting, and 31% engaged in fodder conservation. Adoption of optimal breeds, biogas technology, and solar energy was lower, with solar adoption at just 8%.

15. Radio talk shows were a key strategy for disseminating agricultural information, with 88% of respondents regularly listening to local stations. However, only 11% had tuned in to the project’s radio programs, with the highest listenership in Meru. Timing and content of the broadcasts were identified as barriers, and stakeholders recommended more targeted radio programs on relevant topics like calf rearing and disease control.

16. Agricultural producer groups provided essential services, including milk collection, chilling, training, and access to inputs. About 86% of respondents accessed commercial feeds

through these groups, and 57% received on-farm training. Clinical and artificial insemination services were used by 35% of households, with Meru showing the highest uptake. However, only 25% accessed cooperative-financed services, and some cooperatives provided financial support through partnerships, enabling members to access loans.

17. Milk loss at collection centers was reduced by 46%, from 13% at baseline to 7% at MTE. However, milk rejection at collection centers due to spoilage remained an issue, particularly in Meru, where 27% of households faced rejections. Factors like failed alcohol tests, bad smells, and adulteration were identified as causes. The project's focus on hygiene practices, such as using recommended containers and cleaning milk areas, helped reduce spoilage, with 67% of households adopting best practices.

18. The partnership with the Kenya Dairy Board (KDB) and radio sensitization played a vital role in improving milk quality and safety. However, challenges such as limited KDB staff and resources for field visits were noted, and future projects were encouraged to provide logistical support for training on milk safety. The overall impact of the project showed improvements in milk production, income levels, and the adoption of climate-smart practices, but further investment and focused interventions are needed to fully capitalize on the potential of dairy goat production.

RESULT 2:

19. The Mid-Term Evaluation of the Agri producer groups component involved data collection from 29 out of the planned 30 groups, with 48% female and 52% male respondents. Most respondents (69%) had tertiary education, with a notable variation across counties (90% in Meru, 50% in Tharaka Nithi, 67% in Embu), indicating informed leadership.

20. The project contributed to significant growth in membership, income, and operational capacity of Agri producer groups, fostering improved leadership, enhanced business models, and greater financial sustainability.

21. The project focused on strengthening leadership and management through training and support, enhancing the storage and processing capacities of the groups. Aimed at improving governance, the project collaborated with the Department of Cooperative Development and Social Services to provide structured training and streamline operations. It also helped 30 Agri producer groups develop viable business models such as milk chilling, input provision, and financial access.

22. The project achieved its target of supporting 30 Agri producer groups, which included 3 CBOs, 6 SHGs, and 21 cooperatives. These groups were selected based on specific criteria, ensuring no overlap with other donor-funded initiatives. Membership across the 30 groups totalled 13,871 active members of which 45% (6225 were men) and 7646 (55%) were

female. 10% (127 – 94 male and 33 female) were youth below 30 years. Of these, 55% were women, highlighting their significant role in the dairy sector. The project saw a 13% average increase in membership, with Meru experiencing a 29% increase, and the Mt. Kenya Dairy Cooperative was recognized for the highest growth.

23. The target was for the groups to generate KES 6.1 million by project completion, with a 59% increase in annual income. The MTE showed that the income increased by 62% on average, reaching an additional KES 2.2 million, nearing the target. This growth was driven by increased membership, higher milk collection volumes, and reduced milk loss. The project's financial performance surpassed its 25% income growth target, achieving a 37% increase instead.

24. The project aimed for 70% of Agri producer groups to increase their incomes by 70%, but only 43% achieved a 25% income increase. The groups showed business diversity, with many engaged in milk aggregation and selling to processors. In 2023/24, favorable weather boosted dairy production, particularly with increased fodder availability. Active membership rose by 12%, and fodder production support improved animal feed. Governance improvements attracted more members, increasing milk deliveries. 77% of milk was sold to processors, with 13% value-added by producers, mainly in Embu. Meru Dairy cooperative controls 72% of the milk market in the region.

25. The average monthly income from milk was KES 5.83 million per group, with Meru earning the highest. Other income sources contributed KES 1.1 million. Milk collection is managed through 127 centers, with milk porters earning KES 2,400 daily. The average daily collection across 29 groups is 4,394 liters, with Embu showing the highest increase. Milk processing at the cooperative level increased by 7%, surpassing the 30% target. Spoilage and spillage were reduced, with a 40% reduction in spoilage, against the 50% target. Financial and welfare services are offered by some groups, mainly in Tharaka Nithi.

26. A complaints system was in place, with 59% of respondents agreeing that it functioned effectively. Milk losses, mostly from spoilage (0.6%), and rejections due to poor hygiene, mastitis, and adulteration were significant issues. Chilling facilities are lacking in some areas, contributing to milk quality problems. To address these, Meru Dairy is investing in satellite chilling centers. Challenges include low processing capacity, milk spoilage, price fluctuations, delayed payments, and marketing issues. The project is addressing these with matching funds and other investments to improve chilling infrastructure and reduce milk losses.

27. The study focused on Agri producer group governance and management systems and it reveals various practices across Embu, Meru, and Tharaka Nithi counties. Key findings include that 93% of these groups offer input services, with most providing feed sales (100% in Meru, 90% in Tharaka Nithi, and 89% in Embu). 76% of the groups offer member education, while 52% provide animal health services. Conflict management systems,

including dialogue, warnings, and penalties, are widely used, with 86% of respondents confirming their existence. Risk management practices, such as budget implementation and business contract enforcement, are followed by 55% of groups, especially in Embu (77%).

28. Regarding governance, 86% of the groups hold regular AGMs, and 82% prepare annual financial statements. 45% of respondents report clear separation of duties between supervisory and management committees. However, 55% of groups lack policy documents, though some have membership, HR, finance, and ICT policies. Future actions include youth integration into the dairy sector, establishment of demonstration farms, improved milk transportation, and digitization of operations.

29. In terms of gender and social inclusion, 48% of leadership positions are held by women or youth, with women making significant decisions about dairy income, especially in Tharaka Nithi. The number of groups with women above 30% in leadership were 14 out of 29 representing 48% of the groups, Women in households are also more involved in dairy activities, though men tend to manage finances, especially in Meru, where traditions influence decision-making. The study also notes that most households conserve fodder, but the adoption of home-formulated feeds is limited.

30. Finally, while 60% of Agri producer groups target business models, only 34% implement them. Record-keeping is common, with 97% of groups maintaining production and income records, though households in Meru show lower record-keeping practices.

RESULT 3

31. The project aimed to enhance market access, coordination, and networking within the agrifood value chain, focusing on the dairy sector. At the MTE, 27 viable business linkages were established, connecting Agri producer groups with private companies, including those providing inputs like animal feed and health services. Operational partnerships were strengthened through MOUs and contracts, notably with universities like Embu and Chuka, which contributed to training and extension services. The partnership with county governments involved community mobilization, training, and outreach programs.

32. While the project aimed to identify and implement policy recommendations, none were completed by MTE, highlighting the need for more focus on policy engagement focusing particularly on policy gaps at producers group level rather than on policies at county level. Stakeholder forums were created at the county level, bringing together farmers, businesses, and government representatives. A total of 32 business agreements were signed across the regions, with the majority in Tharaka Nithi (14 agreements). The project fostered strong stakeholder engagement and collaboration, although more time is needed for policy development to unlock further potential in the dairy sector.

EFFICIENCY

33. The project was executed in collaboration with E4IMPACT, with five full-time field staff and additional support from MEAL and accounting departments. County government staff were engaged to provide extension services, with travel costs covered by the project. The project cost €946,487 over 1.5 years, generating €31,500,618 in returns for 16,450 participants, resulting in a benefit-cost ratio of 33 per farmer.

34. At the Agri producer group level, the project focused on improving productivity. The 29 Agri producer groups sold an average of 131,823 liters of milk per month, at €0.35 per liter to processors. The project investment was €946,487, with projected returns of €16,840,388 for 30 Agri producer groups, yielding a benefit-cost ratio of 18 per producer.

35. Despite the limited staffing and large geographical scope across three counties, the project efficiently leveraged local partnerships, ensuring effective resource use. Strategic planning, monitoring, and coordination were emphasized, with monthly partner meetings to address challenges and identify solutions, fostering participatory management.

36. Procurement processes were established well in advance, with a committee overseeing transparency and accountability. The procurement was divided into three categories based on project value, ensuring compliance with established financial guidelines.

37. The total project budget for three years was €1,892,974, with an annual average expenditure of €630,991. At the MTE, the project had expended 50% of the budget (€946,487), translating to a per capita expenditure of €57.5 per farmer. The project successfully enhanced the capacity of Agri producer groups, improving dairy productivity and incomes.

38. Farm-level investments showed significant improvement, with farmers producing an average of 13 liters per day, of which 84% was sold. At the average price of KES 47 per liter, farmers earned KES 187,332.6 (EUR 1,310) annually and KES 280,999 (EUR 1,965) over 1.5 years. The benefit-cost ratio for farmers was 33, meaning that for every EURO invested, farmers generated €33 in returns within 1.5 years.

SUSTAINABILITY

39. The project has made significant investments in building functional partnerships with the county government and private sector organizations, with the aim of ensuring sustainability. Collaboration with the private sector could be expanded to provide subsidies and after-sale services, supporting long-term success. The project also emphasizes business-to-business (B2B) linkages, particularly through deal rooms, to connect cooperatives with smallholder farmers.

40. Capacity development at the cooperative and leadership levels was crucial, although mixed results were noted in terms of member loyalty and adoption of new technologies. While radio stations effectively disseminated training, more suitable timing for broadcasts, such as

evening slots, was recommended. Future capacity building should include milk safety, silage making, and group governance.

41. Environmental sustainability efforts included promoting energy-saving equipment and reducing milk spoilage, which has potential environmental benefits. However, an Environmental Impact Assessment (EIA) is needed to assess the potential risks associated with new investments, particularly in youth-driven initiatives.

42. Social inclusion efforts were robust, with youth participating in grants for dairy sector jobs and women benefiting from improved access to milk collection points. Capacity building on gender ensured that women took on leadership roles within cooperatives, and grants further supported this inclusivity.

43. Sustainability measures also include fostering fodder production, creating business opportunities for youth, and promoting fodder conservation. The cooperatives have developed financing models to help members access inputs, ensuring long-term support for fodder production.

44. Matching grants targeting cooperatives aim to improve milk bulking through investments in cold chains. These initiatives will reduce milk spoilage, improve efficiency, and increase incomes for members. However, continued training on milk handling and quality assurance is essential to maintain standards and increase competitiveness.

45. Good governance within cooperatives, CBOs, and SHGs has fostered member loyalty, increased milk supply, and improved accountability. This strengthens the cooperatives' sustainability, as members continue to see value in their participation, ensuring future growth and success.

IMPACT

46. The project has significantly improved the income levels of smallholder dairy farmers. At MTE, household income had increased by 19%, from an average of EURO 114 to EURO 136, which is aligned with the government’s definition of a dignified income. There was difference in income achieved among women (Euro 130) compared to Men (Euro 143.4). This increase is largely due to a 33% rise in milk production, from 7.8 liters to 10.4 liters per cow per day, with men reporting a 59% increase from 7.8 litres to 12.44 litres while women increased by 9% to 8.5 lits per day per cow, thanks to better access to feeds and fodder, as well as training in silage production. Additionally, 66% of farmers adopted climate-smart practices, of which 65% were female, while 68% were male. These included planting high-yield, drought-tolerant fodder varieties.

47. Investing in dairy farming has also opened up new income streams along the dairy value chain. Farmers have been able to generate income from selling manure, calves, and offering training. These efforts have led to a 78% increase in access to three meals per day, as well

as the ability to pay for school fees and healthcare. This financial improvement has eased the stress of covering basic expenses.

48. The project's collaboration with the public sector has been vital, with livestock and agriculture extension staff receiving training that has improved their ability to support farmers. This partnership has fostered better engagement through media, where farmers can interact directly with experts. However, concerns about inconsistent attendance at steering committee meetings have affected the efficiency of decision-making.

49. At the cooperative level, significant investments have been made in governance and accountability, such as capacity building in financial management and the introduction of digital tools for milk collection, payments, and membership management. These efforts have led to an 11% increase in active milk suppliers and a 37% rise in milk volumes. While the cooperatives are improving, there is a need to expand their role to include more market-oriented activities, such as accessing finance and engaging with other market players.

50. Despite economic and climate challenges, household income from dairy farming increased by 17%, from EURO 114.8 to EURO 136.33 (143.4 for male and 130,1 for Female), though still below the target of EURO 149.24. The project had aimed for 70% of smallholder farmers to improve their income by 30% by the end of the project, but only 20% of farmers (24% male and 16% female) reached this goal.

51. In terms of income diversity, dairy farming remains the primary income source, contributing 62% of household income. Average household income varied by region, with higher incomes reported in Embu (EURO 245.8), followed by Tharaka Nithi (EURO 217.1) and Meru (EURO 192.7). The average income from dairy activities was EURO 136.3, with the highest earnings from dairy-related enterprises observed in Embu. Additionally, 44% of households generated income from other dairy-related activities, such as selling heifers (30%) and manure (23%). These supplementary activities further contributed to the financial stability of farmers.

52. The project also revealed that 88% of households rely on farming as their primary income source, with 8% involved in self-employment and 4% employed in formal jobs, mostly in permanent positions. The project's success in improving incomes and diversifying revenue streams is a promising step toward building a sustainable and resilient dairy sector.

SUMMARY OF CONCLUSIONS:

53. The project has effectively addressed the needs of its target beneficiaries, with thorough assessments conducted during the inception phase. The design and strategy are well-defined, incorporating gender sensitivity and a participatory approach, ensuring alignment with sector policies. Built-in mechanisms for knowledge sharing have also contributed to the dissemination of lessons learned and good practices.

54. In terms of national, county, and global development, the project aligns with Kenya's agriculture agenda and the County Integrated Development Plan (CIDP), supporting the government’s efforts to combat vulnerability and over-exploitation of natural resources. It complements the Agricultural Sector Transformation and Growth Strategy (ASTGS) and is aligned with SDGs 2, 4, 13, and 12.

55. The project has demonstrated efficiency through a detailed procurement plan and strong budget allocation mechanisms. Despite challenges such as drought and flooding, it remains on track to meet most objectives, with certain activities requiring acceleration. The average farmer is producing 13 liters of milk per day, with 84% sold to the market. The benefit-cost ratio for the public-private partnership (PPP) model is 33, meaning farmers generate EURO 33 for every EURO invested, within 1.5 years. Agri-producer groups, with an average of 131,823 liters of milk sold per month, show a benefit-cost ratio of 18 per group.

56. Effectiveness is evident through the completion of key actions in all project results, particularly result 1 and 2. Milk production and revenue from sales have shown a positive trend, though targets have not yet been fully met. Farmers have received subsidized recovery kits for fodder establishment and preservation. Local radio sessions have contributed to awareness and capacity building, though more sessions and extension services are needed. Youth and women have been trained on business model development for Agri input/business enterprises, and 30 cooperatives have improved their operations with ICT tools for digital record-keeping.

57. For sustainability, the project’s collaboration with local ministries and authorities ensures long-term institutional sustainability and ownership. Empowering communities and providing tools for skill transfer contributes to social sustainability. The design of climate-smart equipment and value-adding infrastructures is intended to ensure sustainability and cost-recovery. Environmental sustainability is supported by the capacity-building efforts around climate-smart solutions.

58. The project’s impact is evident in the improved socio-economic status of target communities, particularly in terms of income, nutrition, and attitudes. Agricultural producer cooperatives in Meru, Tharaka Nithi, and Embu Counties have enhanced their leadership, management, and accountability through successful training and input distribution. The project has also effectively managed risks related to political, technical, social, and partnership challenges, leading to improved coordination and networking among agri-food value chain actors.

SUMMARY OF RECOMMENDATIONS

59. The evaluation proposes the adoption of a Result-Based Financing (RBF) model for the future implementation of the safety nets subsidy program. This model would engage the private sector for the sale and distribution of products via cooperatives, with farmers’ contributions redirected to the private sector, while the project covers the cost difference. The private sector would also provide after-sales services such as training and product demonstrations, promoting sustainability.

60. The project's target of a 70% increase in milk production seems overly ambitious, especially given the impact of climate shocks and inflation. Frequent droughts, floods, and rising input costs hinder productivity. Therefore, it may be necessary to adjust this target or implement more resilient strategies for farmers.

61. Milk price fluctuations present a significant challenge for 45% of the producer groups, especially in Embu, where market instability exacerbates the issue. Strengthening the cooperative union could enhance the collective bargaining power of producers and help stabilize milk prices, ensuring more consistent income for farmers. Business agreements and long-term contracts with processors should be explored to further stabilize the market.

62. The evaluation highlights the need to reconsider dairy goat interventions, as no group is dealing with goat milk value chain and there have been insufficient targeted actions for goat farmers. Future programming should include support for dairy goat production as value chain, particularly in regions where goats are a primary source of dairy, with improved breeds, veterinary services, and management training.

63. While the project’s radio talk shows have been valuable, there is room for improvement in their delivery and timing. The evaluation recommends implementing a sensitization plan through farmer groups to improve awareness of scheduled transmissions and adjusting the broadcast time from 8 pm to 9 pm to align better with farmers' schedules.

64. The matching and youth grant initiatives are essential for driving key project interventions, such as climate-smart practices and reducing milk losses. Accelerating these initiatives in the second phase will likely lead to significant, sustainable impacts, empowering young people and supporting climate-resilient practices.

65. The project’s focus on targeting youth groups to establish businesses in the dairy value chain is strategic. However, these youth groups should be formalized into registered business entities rather than SHGs to enable access to greater financial resources and market opportunities. This formalization will allow for scaling operations and engaging in business activities such as loans, partnerships, and advocacy.

66. Women’s participation remains limited due to cultural norms in Meru, where women may hesitate to take leadership roles or claim ownership of assets. Continuous sensitization is recommended, and the involvement of a gender specialist could help address these barriers.

67. Private sector partnerships should be prioritized to leverage matching and youth funds effectively. The project could facilitate business-to-business (B2B) deal rooms to foster linkages between the private sector, public bodies, and producer groups.

68. The evaluation also recommends scaling up best practices identified within the Mt. Kenya Dairy Cooperative in Timau, which provides financial support through partnerships with financial service providers. This model should be replicated to enhance access to capital for cooperative members. Additionally, the successful approach of the Meru Dairy Cooperatives in providing extension services, breed improvement, and animal health should be expanded to increase productivity.

69. Policy development under Output 3 should be expedited during the second phase of the project, with a focus on producer group-level policies rather than county-level policies. These

policies should address procurement, human resources, quality control, financial management, ICT, and membership. This producer group-focused approach is more practical, as it avoids lengthy county assembly processes and can be validated through a stakeholder forum.

70. Finally, due to delays in the project's startup and approval processes, the evaluation team recommends a six-month no-cost extension to allow for the completion of planned activities and ensure the achievement of the project's objectives without additional financial costs.

1. Background to the study

1.1 The dairy sector

71. Dairy industry plays a significant role in Kenya's economy especially in employment creation, manure provision and food security. With annual milk production in Kenya estimated at 54 tons of milk in 2023, the dairy sub-sector provides a means of livelihood to about 2 million Kenyan households (Kyule, G and Nguli, J, 2020)[1]. **Milk production** is a key economic activity in Meru, Tharaka Nithi and Embu Counties where the climatic conditions are favourable for milk production. However, milk production is below potential in all project counties. In Tharaka Nithi the daily yield per cow is 5-6 litres in the dry season and 8-10 litres in the wet season.

72. The majority of smallholder farmers lack adequate resources and dairy management knowledge to profitably engage in sustainable dairy farming. Production varies with weather, sometimes decreasing by as much as 50% during the dry season. Poor and inadequate feeding and inappropriate animal husbandry practices result in low milk yields. Other constraints include unstructured milk production and marketing system, poor milk quality especially when handled through traders and hawkers, lack of strong farmer institutions, poor environmental and climate change management and limited access to capital. In the three target counties, dairy market consists of a both a formal and an informal market. In the formal market, the milk is usually transported by farmers or assemblers to chilling centres, then to the processing facility. The formal system, which accounts for about 30-40% of the dairy market, mainly involves registered processors and serves a wealthier demographic that demands better quality, packaging and convenience and also willing to pay higher prices for the products. The formal market offers significant value to the farmer through employment opportunities and by offering regularly scheduled payments, usually monthly.

73. AVSI foundation in partnership with E4IMPACT initiated the Mid-Term Evaluation (MTE) with the purpose of verifying the level of achievement of the results with respect to the implementation of the Economic Recovery project towards realizing its objectives and

[1] https://kippra.or.ke/wp-content/uploads/2021/02/Exploring-Kenya-Dairy-Industry-for-Job-Creation-for-the-Youth-DP232.pdf

outcomes and draw out lessons for how the project can be improved during the remaining period of implementation for more positive outcomes.

1.2 Methodology and Approach

74. **The evaluation approach and Plan:** The project mid-term evaluation employed a mixed methodology, which included both qualitative and quantitative approaches guided by participatory tools and techniques, addressing each objective and research question, guided by the organization for Economic Co-operation and Development - Development Assistance Committee (OECD – DAC) criteria.

Table 2: Evaluation criteria.

Criterion	Key Evaluation Question
Relevance	To what extent has the program addressed the needs of the community? How well did the program align with government and agency priorities?
Effectiveness	To what extent did the program contribute to improving the resilience and self-sufficiency of community in Laikipia County, Kenya?
Efficiency	How efficient was the implementation, management and monitoring of the program?
Sustainability	How sustainable are the benefits created with the intervention likely to be in the medium to long run?
Impact:	What kind of impact has the program had on the target area?

75. **Review of secondary information:** The first step of the study was to review secondary information regarding the project. This involved an extensive and in-depth review of published literature, especially on baseline for the respective counties Further review targeted project reports and equivalent project reports being implemented by other partners in the project area. We also reviewed the county integrated development plan (CIDP) to gather information and assessed to what extent the project was contributing to its achievement. Other documents that were reviewed included project implementation plan (PIP), project result frameworks to triangulate information that was collected from the primary data.

76. **Key Informant Interviews (KII):** Key informants included participants with key information about the project. The individuals were identified in collaboration with AVSI staff. These were used to gather in-depth information on the project based on guided interviews and was used to triangulate with the quantitative individual household and cooperative survey. Some of the Key informants interviewed included the following: Government staff, ministry of agriculture and cooperative staff, leadership at the Agri producer groups, partners such E4IMPACT. A total of nine (9) KIIs were conducted. All the KII were administered by the ENVIRONOMICA consultants.

77. **Focus Group Discussion:** Focused group discussions (FGDs) were undertaken at group level targeting women, mixed groups of men, women and youth. In total, six (6) FGDs, were

done, reaching 60 participants. The FGD comprised of 10 members (5 women and 5 men). Pre-prepared guiding questions for focus group discussions (FGD) was used. The FGD followed all the prescribed ethics of conducting such an exercise. The language of discussion in the FGD session was the local language, mainly Swahili and English. All FGD were administered by the ENVIRONOMICA consultants.

78. **Individual Household and cooperative interviews:** Individual household interviews were conducted targeting participants directly benefiting from the project, to gather data attributed to the beneficiary's knowledge, attitudes practices (KAP), incomes, value chain production and productivity, women participation in leadership and household activities. A general questionnaire in line with the project end line survey evaluation objectives and the project MEL plan was prepared for household and cooperatives and agreed upon with the Project Management Team at AVSI Foundation. The interview questionnaires were semi-structured to allow for exploratory opinions of the participants to be captured. The questionnaire was administered to a total of 584 individual participants (52% female and 42% Male). Data was collected through Computer Assisted Personal Interviews, by a team of trained enumerators drown from the project location, under the supervision of the AVSI and E4IMPACT staff. At cooperative, CBO and SHG level, 29 respondents, representing 29 Agri producer groups were interviewed by the AVSI and E4IMPACT Project staff.

79. **Data Cleaning and Analysis:** The collected data was subjected to a cleaning procedure before analysis. The cleaning procedure involved data profiling by getting frequencies for each variable to help identify missing and blank values and identifying variables that are wrongly recorded. The data was then summarized in means, median, mode and range to identify unexpected values. Quantitative data analysis was run on SPSS (Version 25) for the complex analysis (both Descriptive and inferential), Ms Excel was used to generate info graphics and performance of simple analysis procedures. Qualitative data analysis was done in two methods; narrative and content analysis, where the analysis helped generate information from observations made from both KII interviewers and FGD facilitators and stories and experiences shared by the project beneficiaries both direct and indirect while the content analysis generated information from the beneficiaries' responses in terms of media, text, and physical items. The qualitative analysis results were thereafter used to triangulate the quantitative data and helped in interpreting the information coming out from the quantitative analysis. The final analysis results were then compared with the baseline results.

80. The evaluation provides ratings for each the evaluation criteria. Criteria are rated on a six-point scale as follows:

(1) **Highly Satisfactory (HS)**: There were no shortcomings; quality of implementation/execution and level of outcomes achieved clearly exceeded expectations

(2) **Satisfactory (S)**: There were no or minor shortcomings; quality of implementation/execution and level of outcomes achieved met expectations.

(3) **Moderately Satisfactory (MS)**: There were some moderate shortcomings; quality of implementation/execution and level of outcomes achieved more or less met expectations
(4) **Moderately Unsatisfactory (MU)**: There were significant shortcomings; quality of implementation/execution and level of outcomes achieved was somewhat lower than expected
(5) **Unsatisfactory (U)**: There were major shortcomings; quality of implementation/execution and level of outcomes achieved was substantially lower than expected
(6) **Highly Unsatisfactory (HU)**: Only a negligible level of outcomes achieved and there were severe shortcomings in quality of implementation/execution
(7) **Unable to Assess (UA)**: The available information does not allow an assessment of the quality of implementation and execution and the level of outcome achievements.

1.3 Limitations

81. During the study period, there was information circulating regarding the Kenya Revenue Authority's introduction of taxation on agricultural produce. This may have influenced participants to underreport their income in an attempt to minimize potential tax liabilities. To mitigate this risk, enumerators received thorough training on how to appropriately engage with participants, clearly explaining the purpose of the study to reduce misunderstandings. Additionally, staff from AVSI and E4IMPACT played a crucial role in sensitizing participants about the survey's objectives, which helped to build trust and confidence among the respondents.

1.4 Reader's guide

82. This report is composed of five sections. After the introduction, the report provides background information describing the context in which the evaluation takes place. The following section describes, analyses, and discusses the main findings of the evaluation arranged by evaluation questions (section 3). A list of conclusions in section 4 is followed by operational and strategic recommendations in sections 5. The appendixes and annexes provide information about the evaluation process, methodology and the analysis conducted to back the findings, conclusions and recommendations.

2. Background & context of the project

2.1 Context of the project

83. Economic Recovery to the Impact of Covid-19 on Agri-food Value Chain in Kenya Project, aims to improve the socio-economic status and contribute to the economic recovery of a minimum of 15,840 small farmers residing in the three counties by strengthening the identified agri-producer group, optimizing local production, promoting job creation, increasing average income, and improving the food security status of the beneficiaries.

84. Based on a results-based project management system, SMART indicators have been identified, mostly connected to international codification (including the SDGs) for defining the criteria that guide the designation of objectives. The final impact that will be measured based on the latter translates into the following: (1) At least 70%of small Agri-food producers report an increase in household income of at least 30% in the dairy industry; (2) at least 70%of small Agri-food producers within 10 Agri producer groups adopt at least 50% of innovative Climate Smart Production measures promoted by the project and related options; (3) 500 new jobs within the value chain; (4) 70% of enterprises increased the volume of production per production unit by more than 25% by the end of the project; and (5) 50%reduction in post-production losses

2.2 Project background

Table 3: Project background.

Project Title	Economic Recovery to the Impact of Covid-19 on Agri-food Value Chain in Kenya Project
Project goal	**General Objective:** Contribution to the improvement of the socio-economic status of the Local communities, and recovery of levels and standards of production in times of COVID-19.
Specific Objective	**Specific Objective:** Enhancement of the Agri-producer cooperatives in Meru, Tharaka Nithi and Embu Counties.
Expected Result 1	Production and income levels of small holder farmers rebuilt and restored.
Expected Result 2	Agri-Producers Cooperatives/groups leadership, management, accountability, storage and processing capacity reinforced.
Expected Result 3	Access to structure in-put and out-put market, coordination and networking of Agri-food value chain actors improved.
Target Beneficiaries	15,000 840 Agri producer group leaders from other producer groups.
Funded by	Italian Development cooperation
Budget	EURO 1,892,974
Donor contribution	EURO 1,798,325

AVSI Foundation	EURO 66,234
E4IMPACT Foundation	EURO 28,415
Project duration	3 Years
Project area	Meru, Tharaka Nithi and Embu Counties in Kenya
Lead agency	AVSI Foundation
Partner/s	E4IMPACT

3. Findings of the evaluation

3.1 Relevance

Criterion	Relevance
Overall score	**Highly Satisfactory (HS)**

Evaluation question 1: To what extend has the intervention addressed the needs of the community?

Sub-question 1.1: Have the needs of the target beneficiaries been assessed and included in the intervention?

85. The project conducted several key studies to assess the needs, opportunities, and potential entry points within the targeted communities. One such study was a commercial feed assessment, carried out by the University of Embu for Embu County and Chuka University for Tharaka Nithi County. This study revealed the presence of numerous feed brands in the market; however, it highlighted concerns regarding their quality, particularly in terms of protein content, with most failing to meet the required levels. Additionally, the analysis found that many of these feeds contained aflatoxin levels exceeding the acceptable limits.

86. Another important study, conducted by the Cooperative University, focused on the dairy value chain. It identified a wide range of dairy value chain actors within the counties but found that there were no existing platforms for networking and collaboration among them. The study further identified several opportunities within the dairy sector, such as fodder production and the commercial feed business. It also concluded that for farmers to reach a breakeven point, they would need to maintain a minimum of 2 to 3 dairy cows.

87. Together with the baseline survey, these studies provided valuable insights into the main challenges faced by the target communities. The findings from these assessments were

instrumental in informing the project's implementation strategy and contributed to the refinement of the project's implementation plans.

88. The implementing partners have activated mechanisms to adjust according to the needs of the beneficiaries in the changing environment to a good extent.

89. Challenges associated with Dairy production: in the MTE, respondents were asked to rank the key challenges affecting dairy production at the household level on a scale of 1 to 5, where 1 represented the least challenging and 5 represented the most challenging. The study found that the high cost of farm in puts was the most significant challenge, consistently ranked as the highest across all counties, with a mean score of 4. This was followed by challenges such as price fluctuations, limited land size, unpredictable weather, limited extension services, poor quality input services, and pests and diseases, all of which received a score of 3, indicating a moderate level of concern.

90. Weather-related challenges, in particular, were noted as a significant issue, especially in early 2024, when flooding severely affected fodder production, resulting in an insufficient feed balance for dairy cows. This highlights the vulnerability of dairy production to climatic factors, further underlining the need for climate-smart interventions and improved resilience strategies within the sector.

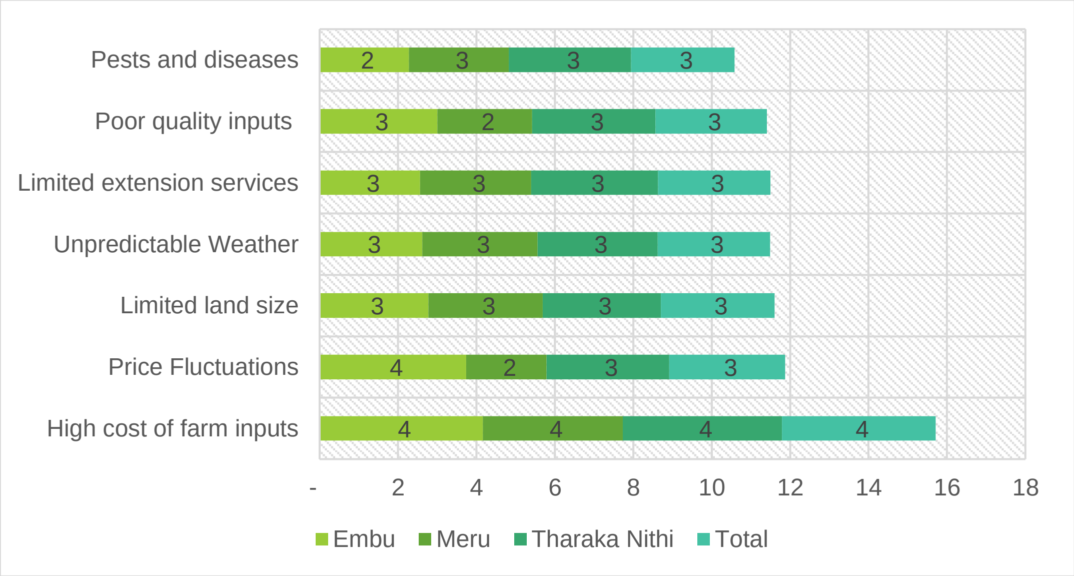

Figure 1: Challenges affecting Dairy production in Meru, Tharaka Nithi, and Embu counties

91. In Meru County, the Director of Livestock highlighted that urbanization has led to increasing challenges in water access and availability in rural areas. The government has been redirecting water from local reservoirs to urban areas to meet the growing demand from the expanding population, leaving rural communities without sufficient water for irrigation. In

response, the project has implemented several mitigation measures, including sensitizing the community on drought-tolerant fodder varieties and linking cooperatives to private sector companies for the supply of agricultural inputs. Some cooperatives have also invested in providing input services, enabling members to access essential inputs on credit, with repayment made through the supply of milk. Additionally, as part of COVID-19 recovery efforts, the project provided fodder, molasses, and polythene bags to help reduce the costs associated with silage production.

92. At the agricultural producer level, the study found differing challenges between counties. In Tharaka Nithi, mismanagement of cooperative societies and lack of milk storage were among the least reported challenges, with respondents ranking them as a 2 on average. In Meru, mismanagement of cooperatives was the least reported of the three challenges, scoring a 1, followed by challenges such as price fluctuation, poor quality inputs and services, shortage of labor, and milk spoilage, which were all ranked with a score of 2. Notably, Meru had a higher concentration of cooperatives compared to Embu and Tharaka Nithi, which had a mix of Community-Based Organizations (CBOs) and Self-Help Groups (SHGs). The CBOs and SHGs tend to experience less stringent management practices due to their registration status, which may explain why fewer respondents in Meru reported mismanagement as a major issue compared to the other counties.

Before the project we had challenges in accessing fodder for livestock, market for milk, and the production of milk was low due to poor breeds. The project has addressed these challenges by provision of inputs, with members contributing KES 2,000 as cost share. Improvement in livestock breed and trainings on fodder production and conservation has led to increase in milk production.

Member of the Ankamia Dairy Cooperative, Meru County

93. Challenges of the Agri producer groups in delivery of services: In their efforts to provide embedded services, Agri producer groups identified milk price fluctuations as the greatest challenge they face, affecting 50% of the groups. This challenge was most pronounced in Embu, where 77% of the groups reported price volatility, followed by 53% in Tharaka Nithi and 21% in Meru. Discussions with farmers in Embu and Tharaka Nithi revealed that these areas lack reliable milk processors to consistently purchase milk, unlike Meru, where the Meru Dairy Cooperative provides a more stable and competitive price throughout the year.

94. Additionally, 31% of the Agri producer groups reported low processing and cooling capacity as a significant constraint. The limited storage capacity means that these groups are unable to absorb the milk produced by their members, leading to potential losses. To address this issue, the project’s intervention through the Matching Fund aims to help increase the chilling capacity of the cooperatives, providing a potential solution to improve storage and processing capabilities.

95. Other challenges identified by the Agri producer groups include lack of youth representation, mentioned by 22% of the groups, and marketing challenges, noted by 20% of the groups,

with the highest percentage, 29%, from Tharaka Nithi. The marketing challenge is largely due to the lack of consistent buyers, which complicates the ability to establish stable sales channels for dairy products.

96. These findings confirm the high relevance of the project's effort on providing further support and targeted interventions to address the structural and market-related challenges faced by the Agri producer groups, particularly in improving processing capacities, stabilizing milk prices, and enhancing youth involvement in dairy value chains.

Table 4: Current constrains facing your cooperative/group societies

	Embu	Meru	Tharaka Nithi	Aggregate
Price Fluctuations	77.2%	20.7%	52.7%	49.8%
Processing and cooling capacity	20.8%	36.9%	35.3%	31.0%
Lack of youth representation	6.6%	27.1%	32.6%	21.9%
Marketing	22.3%	10.8%	28.8%	20.4%
Delayed payment	28.9%	6.4%	22.3%	19.0%
Milk spoilage	3.6%	41.4%	4.3%	17.0%
Leadership and governance	13.2%	3.0%	25.5%	13.5%
Record keeping	5.1%	9.4%	13.0%	9.1%

97. Milk payment delays were reported by 19% of respondents, likely due to inconsistent cash flow within the Agri producer groups. This issue is particularly concerning as it can undermine trust and participation among members. Additionally, milk spoilage at the cooperative level affected 17% of respondents, with 42% of the reported cases in Meru County, indicating that spoilage remains a significant challenge in some areas, particularly in relation to processing and chilling capabilities.

98. The study also identified weak leadership within the Agri producer groups as a challenge for 14% of respondents, with the highest percentage, 26%, reported in Tharaka Nithi, and 13% in Embu. The governance issue was largely attributed to the registration status of most Agri producer groups in Embu and Tharaka Nithi, which are primarily Community-Based Organizations (CBOs) or Self-Help Groups (SHGs). These entities are subject to less stringent governance requirements compared to cooperatives, where governance is more formal and regulated, as seen in Meru County. This difference in structure and governance has led to disparities in leadership strength and decision-making effectiveness between counties.

99. Another challenge highlighted was poor record-keeping, which was reported by 9% of the respondents, with 13% of respondents from Tharaka Nithi expressing concern. Proper record-keeping is essential for ensuring accountability and tracking the performance of the Agri producer groups. The lack of records is often a sign of weak management and governance, which can hinder the group's ability to make informed decisions and build trust with members. To address this, the project plans to provide laptops and printing machines

to the Agri producer groups, which will help improve record-keeping practices and potentially enhance accountability and transparency within the groups.

100. The project strategy focused on strengthening the leadership, improving financial management, and enhancing record-keeping practices within the Agri producer groups was found highly relevant. Despite this, more efforts are needed with the groups operating under the less formal structures of CBOs and SHGs.

Sub-question 1.2: How clear and realistic are the objectives of the project and its design?

101. The project design and the theory of change are clear and fully described in the project document and based on a clear logical framework that shows good vertical consistency. The objectives of the project are considered clear and realistic.

102. The project General Objective is: Contribute to the improvement of the socio-economic conditions of local communities and the recovery of production levels and standards before the COVID-19 pandemic.

103. The Specific Objective is: Development and Strengthening of Farmers and Producers Agri producer group in Tharaka Nithi County.

104. The design of the project interventions, centered around strengthening agricultural producer groups, aimed to encourage members to invest in the dairy value chain. This approach was particularly relevant as it provided strong incentives for members to adopt climate-smart technologies, thereby increasing milk production. The project's emphasis on these technologies aligned with the readily available market for dairy products, fostering an environment where increased production could be sustained.

105. The positive ripple effects of this strategy have been evident in the growth of group membership and an increase in the volume of milk delivered. Additionally, the project's focus on climate-smart production practices, minimizing spoilage, and value addition proved to be highly relevant to the community members. These efforts were critical in building resilience to the impacts of climate change, such as reduced rainfall and, in Meru County, the decreased water availability due to government interventions aimed at urban water supply.

106. These climate adaptations have not only contributed to improved yields but have also led to a significant reduction in milk spoilage, ultimately translating into higher incomes for the farmers involved.

Sub-question 1.3: Is the project implemented with a dimension of gender sensitivity?

107. Throughout the evaluation, several key insights were uncovered, demonstrating both strengths and areas for improvement in terms of programmatic gender mainstreaming.

108. The project reported significant economic benefits, including increased profitability and leadership opportunities for women, alongside non-economic benefits such as enhanced

self-confidence and empowerment. However, women faced barriers in economic participation due to societal norms and limited control over financial resources. The project also adopted several genders-responsive and transformative measures, well-received by participants. Among the 29 groups assessed, 14 (48%) had more than 30% of their leadership positions held by women.

109. The project intentionally focused on increasing the participation of women and youth in the dairy value chain, specifically at the production level and within agricultural producer group management. Through targeted training on governance, the project sensitized the groups on the 1/3 gender rule as outlined in Kenya's 2010 Constitution, which mandates female representation in leadership positions. As a result of these efforts, there has been a notable increase in the number of women occupying leadership roles within the groups, compared to the baseline data. This shift not only supports gender equality but also strengthens the leadership and governance capacity of the agricultural producer groups, contributing to more inclusive and sustainable development within the dairy value chain.

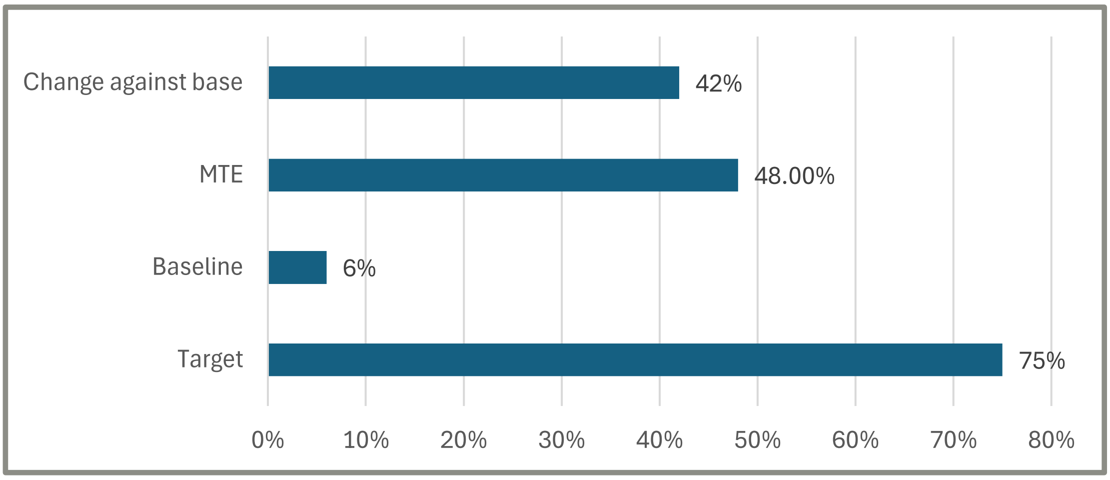

Figure 2: Percentage of cooperatives with women and/or youth in leadership position

110. A review of decision-making dynamics at the household level has revealed a notable increase in the involvement of women in decisions regarding both major and minor assets, as well as borrowing. This shift has been largely driven by economic empowerment, particularly through improved income generation opportunities and better access to inputs. While women’s participation in household decision-making has significantly improved, it has not yet reached full parity due to persistent cultural beliefs that place the man as the primary household head.

111. At the cooperative level, efforts are being made to encourage women to assume leadership positions, with a clear focus on promoting gender equality and women’s leadership. In addition, the planned inclusion of a grant targeting at least 300 youth is expected to further support economic empowerment, providing opportunities for decent employment and income generation. This initiative will also position youth, particularly women, for future

leadership roles within the cooperatives, contributing to long-term sustainability and inclusive development.

112. The project's Monitoring and Evaluation (M&E) framework included sex-disaggregated data. In conclusion, in order to consolidate and measure these significant gender-inclusive practices, the evaluation team recommends having a deeper focus on incorporating gender-specific M&E tools as well as nominating a dedicated gender focal point at project level to provide technical support.

Evaluation question 2: How well did the program align with government and agency priorities?

Sub-question 1.1: Have linkages and synergies with complementary programs been created?

113. The project has built a solid and sustainable partnership with the respective county departments (Livestock, cooperatives, agriculture and KDB), that has leveraged on their resources. The respective department staff have participated in several project's activities such as the radio talk shows targeting community members to improve their capacity on fodder production and milk safety.

114. Through the National Agricultural Value Chain Development Project (NAVCDP), a World Bank-funded initiative implemented by the county government, the project is strategically leveraging support across various value chains within the households of participants targeted by the MAZIWA II project. These complementary interventions have contributed to a holistic increase in household incomes, thereby supporting dairy-producing households and enhancing their overall economic resilience. By integrating multiple value chains, the project fosters broader economic opportunities, strengthening the livelihoods of farming families and promoting sustainable development within the dairy sector.

Sub-question 1.1: What relevant national and international policy frameworks align with the goal of the project? (SDG, Vision 2030, Constitution of Kenya, Etc)

115. The project has made significant contributions to advancing the national government's agricultural agenda, as well as aligning with the County Integrated Development Plan (CIDP). Key informant discussions with government officials, confirmed the positive impact of the project in strengthening the dairy sector, a key value chain in the region, supporting both the local economy and the county's broader agricultural development goals.

116. Key areas of support have been on infrastructure development and capacity development of the dairy farmers, leveraging the efforts by the county livestock department. The agriculture and livestock department's mission, as outlines in the respective County Integrated Development Plan (CIDP) 2023-27, aims at promoting livelihoods and sustainable competitive Agriculture, Livestock, and Fisheries Sub sectors while conserving natural resources and to promote environment-friendly livestock breeding, production and

marketing systems. The contribution of the project towards job creation, improved incomes and building the capacity of the 30 farmer organizations has therefore contributed towards the respective county strategic ambitions.

117. The project was complementing the efforts of the national government in fighting increasing vulnerabilities of communities and over exploitation of the natural resources, as envisioned in the Agricultural sector transformation and growth strategy[2] (ASTGS, 2019)'s anchor 3, that aims at boosting household food resilience. The project interventions have been aligned to SDGs 4 out of the 17 goals (2, 4, 13 and 12).

3.2 Effectiveness

Criterion	Effectiveness
Overall score	Satisfactory

Evaluation question 3: To what extent did the program contribute to the development and strengthening of Cooperatives of Farmers and Manufacturers in Meru, Embu and Tharaka Nithi Counties?

RESULT 1: Production and income levels of small holder farmers rebuilt and restored.

To what extent the project restored the levels of production and income of small producers

118. **Household dairy Milk Production:** The project targeted to improve dairy milk productivity by 70% from a baseline of 7.8 lits/cow per day, and that of dairy goat by 100%, from 1.4 lits per goat per day to 3 Lits per goat per day. At midterm evaluation, the dairy milk productivity has increased by 33%, from 7.8 lits/cow/day to 10.4 lits/cow/day, against the overall target of 12 lits/cow/day. Dairy goat milk productivity has increased by 6%, from 1.4 lits/goat/day to 1.48 lits/goat/day, against the target of 3 lits/goat/day.

119. High dairy milk productivity was noted in Meru, with households recording a 12.9 lits/cow/day, compared to 8.3 lits in Tharaka Nithi and 9.9 lits in Embu. Discussions with the extension staff indicated that Meru Dairy cooperatives have put in place systems for extension, breed improvement and animal health services, which has built the capacity of farmers, compared to the two other counties.

Table 5: Milk Production and productivity lits/cow/day

[2] GOK 2019. Agricultural sector transformation and growth strategy (ASTGS, 2019

OUTCOME Indicator	Target	Baseline	MTE	Change against base	Male	Female
Percentage of livestock productivity (e.g., milk yield per head), disaggregated by type of produce	70%	0%	33%	33%	9%	59%
Livestock productivity (e.g., milk yield per head), disaggregated by type of produce (Lits/Cow/Day)	12	7.8	10.4	+2.6	8.5	12.44

120. Generally, the improvement of the dairy milk productivity has been associated with the increased access to fodder, which was partially stimulated by the provision of seed and silage making inputs by the project and favourable climatic condition. The project had put significant efforts on fodder conservation, zero grazing and Silage preservation at household level.

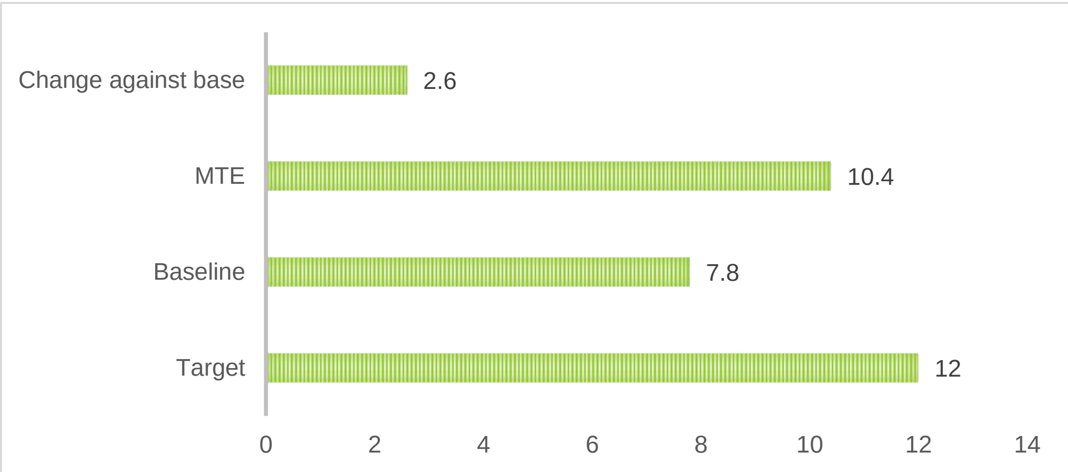

Figure 3: Dairy Milk marketing outlets

121. The study found that, on average, households own three cows, two of which are heifers—one lactating and the other dry—at any given time. The average daily milk production per household is 13.1 liters. Of this, 9% is sold to neighbors, 75% is sold to the cooperative, 11% is consumed by the household, and 1% is fed to the calf.

122. The average price of milk is KES 47.5 per liter, which has the potential to generate an income of KES 615.7 per day if the entire daily production were sold. This translates to an annual income of KES 224,730 (assuming 365 days of production). While milk prices did not vary significantly across the three locations, the price in Meru was slightly higher at KES 49 per liter, compared to KES 46 in Embu and KES 47 in Tharaka Nithi.

123. **Dairy goat production and productivity** Only 14% of the respondents own dairy goats, with majority, 18% in Embu, compared to 15% in Tharaka Nithi and 10% in Meru. The high proportion of dairy goats in Embu County was as a result of investment by other

organizations such as Caritas, that provided dairy goats at household level, and also invested in local breed improvement through distribution of the bucks. On average, households own at least 2 dairy goats. At baseline, the dairy goat milk productivity was 1.4 lit/goat/day. This has increased by 6% to 1.48 lits/goat/day.

Table 6: Dairy Goat production and productivity

OUTCOME Indicator	Target	Baseline	MTE	Change against base	Male	Female
Percentage of goat productivity (e.g., milk yield per head), disaggregated by type of produce (%)	100%	0%	6%	6%	0	0
Goat productivity (e.g., milk yield per head), disaggregated by type of produce (Lits/Goat/Day)	3	1.4	1.48	+0.8	1.82	1.07

124. The study also revealed that only 6% of households owning dairy goats sell milk, indicating a significant under-commercialization of the dairy goat value chain across the three counties. However, the study highlighted that the price of dairy goat milk was 77% higher than that of dairy cow milk, with an average price of KES 83 per liter. In Meru, the price was particularly high, reaching KES 120 per liter, compared to KES 73 in Tharaka Nithi and KES 85 in Embu. This price differential suggests there is untapped potential for the commercialization of dairy goat milk, which could serve as a viable income-generating opportunity for households.

125. Despite this potential, the project's interventions related to dairy goat production were limited, primarily focusing on fodder production. The study recommends reconsidering the dairy goat's indicator from the project's logical framework and suggests that future efforts consider dairy goat commercialization as a standalone intervention. Achieving a 100% increase in productivity without clear and targeted interventions will not be feasible. Therefore, the study advocates for greater investment and focus on dairy goat production to fully capitalize on the market's potential and meet the project's objectives.

Adoption levels of the Climate smart technologies

Indicator: Number of HHs or productive units with access to climate-smart innovative options promoted by the action (e.g., energy-saving technologies, etc.), and type of option.

126. The project targeted to have 70% of its participants, adopting at least 2 climate smart technologies by the end of the project. As at MTE, the study noted an achievement of 66% of the participants who have adopted at least 2 climate smart technologies, from the baseline of 21%, representing a 45% increase.

127. The project employed various methodologies to sensitize participants about climate-smart technologies, which included, but were not limited to, **trainings** conducted by agricultural producer group staff, **exchange visits** with elite farmers, and **exposure interactions** with both the private and public sectors through **Dairy Farmers' Field Days** organized by the Meru Dairy Cooperative and respective county governments. Additionally, the project utilized **radio talk shows** facilitated by county staff from the Department of Agriculture, Livestock, and the Kenya Dairy Board to further promote climate-smart practices.

Table 7: Proportion of farmers have adopted at least 2 sustainable agriculture practices

Indicator	Target	Baseline	MTE	Change against base	Male	Female
% of farmers have adopted at least 2 sustainable agriculture practices	70%	21%	66%	45%	67.89%	64.90%

128. Regarding adoption of climate-smart technologies, the study found that **41%** of households had adopted **water harvesting and conservation** practices, with the highest adoption rate in **Tharaka Nithi** at **62%**, followed by **41%** in **Embu** and **23%** in **Meru**. Tharaka Nithi's relatively low rainfall regime has driven households to adopt water harvesting techniques to support both agricultural and household needs.

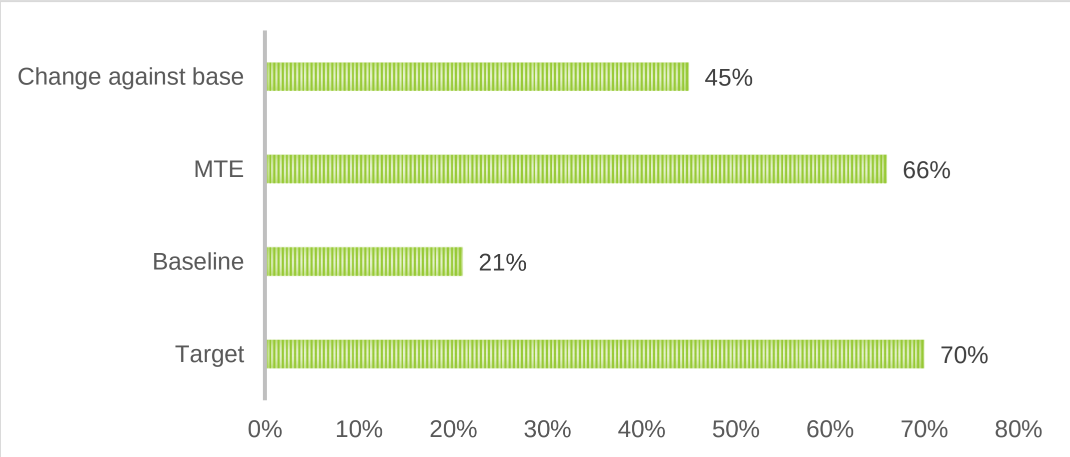

Figure 4: Diversity in climate smart technologies

129. In terms of **fodder preservation and conservation**, **31%** of households reported engaging in practices such as making **silage** and **hay**, with **42%** of respondents in Embu adopting these practices. Given the limited land sizes across all three counties, large-scale fodder production is challenging, making fodder conservation a crucial strategy for building resilience.

130. The adoption of **optimal breeds** and **biogas technology** was reported by **12%** of respondents in each case. Adoption rates for **optimal breeds** were highest in Meru (**23%**), while biogas adoption was notably more prevalent in Meru due to the presence of several

biogas companies, such as **System BIO**, that have promoted the technology, resulting in a higher adoption rate in that county. **Solar technology** adoption was relatively low, with only **8%** of respondents utilizing solar technologies.

131. The evaluation team recommends a more **targeted and strategic inclusion of the private sector** in all counties to enhance the adoption of climate-smart technologies. Stronger collaboration with private companies could help address the barriers to adoption, improve access to technology, and ultimately increase the impact of climate-smart practices across the dairy value chain.

Table 8: Climate smart technology adoption rates in Meru, Tharaka Nithi, and Embu counties

Climate smart technologies have you adopted	Embu	Meru	Tharaka Nithi	Aggregate
Water harvesting and conservation for agricultural use	40.6%	22.7%	62.0%	41.1%
Fodder preservation- Silage and Hay	41.6%	25.1%	26.6%	31.2%
Biogas	15.2%	12.3%	8.7%	12.2%
Optimal breeds	22.8%	2.0%	12.0%	12.2%
Solar technologies	5.6%	9.4%	8.7%	7.9%
Storage tanks	.5%	0.0%	0.0%	.2%

132. **Use of Radio for delivery of training modules:** The project introduced radio talk shows as a key strategy to reach a broader audience with information on good agricultural practices and milk safety. These talk shows were aired through local radio stations and were facilitated by extension staff from the Ministry of Agriculture, Livestock, and the Kenya Dairy Board (KDB).

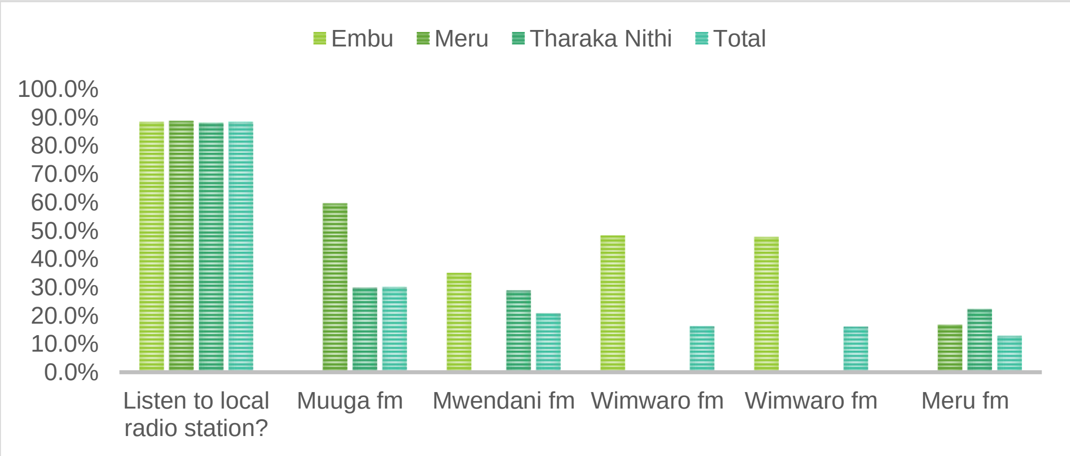

Figure 5: Proportion of respondents who listen to local radio stations and diversity of the radio stations

133. The study found that **88%** of respondents regularly listen to local radio stations, with a similar distribution of radio listenership across all three targeted counties. This high level of engagement justifies the use of radio as an effective medium for disseminating training and

educational content, ensuring that key messages reach a wide audience, particularly in rural areas where other forms of communication may be less accessible.

134. Muuga FM is the most listened local radio station, with 30% listeners, with majority, 60% in Meru and 30% in Tharaka Nithi. Muuga FM broadcasts in Meru dialect and therefore relevant to most of the community members in Meru County. Mwendani FM is listened to by 21%, with majority, 35% in Embu, followed by 29% in Tharaka Nithi. Wimwaro FM is listened to by 32% of the respondents, with 95% in Embu. Discussions with community members in Embu confirmed that Wimwaro is the main radio station, as it broadcast in local language. Other radio stations include Meru FM, Inooro, Weru, Citizen, Getu and Mwago FM, Meru FM and Inooron which are listened to by 13% and 5% respectively, more so in Meru and Tharaka Nithi.

135. The study revealed that only **11%** of respondents had ever listened to the radio programs organized by the project, with the highest listenership in **Meru** at **20%**, compared to **4%** in **Tharaka Nithi** and **9%** in **Embu**. Discussions with community members indicated that the majority were unaware of these programs. In many cases, the airing times were not conducive for the target audience, with most programs being broadcast between **7 a.m. and 9 a.m.**, a time when many community members are engaged in farming activities or other daily tasks. This misalignment with the community's schedule highlights the need for revisiting the timing of these programs to ensure greater reach and impact.

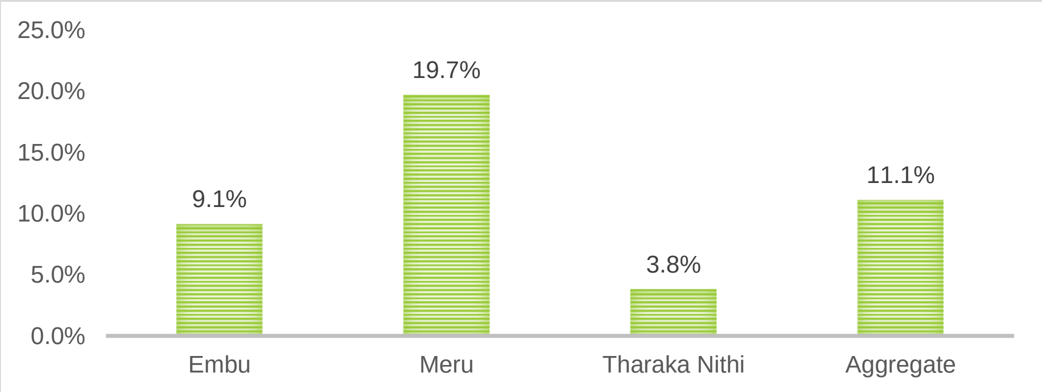

Figure 6: Proportion of participants who have Listened to radio programs organized by Project

136. Other stakeholders have raised concerns regarding the methodology used for the radio programs and have suggested that there should be more focused efforts to **sensitize the target audience** on specific topics that are directly relevant to their needs. They proposed that future radio discussions should concentrate on key areas such as **calf rearing**, **disease control**, and **milk production**, as these were identified as priority topics by the community.

137. Additionally, stakeholders emphasized the importance of **analyzing the impact of the radio programs** on the community. Conducting such an analysis would provide valuable insights into how effectively the programs are reaching the intended audience and influencing behavior. This feedback could inform the review of both the **training content** and the

delivery methods, ensuring that the radio programs are more targeted and impactful in addressing the community's most pressing challenges.

Embedded services provided by the Agri Producer groups:

138. The study found that, in addition to milk collection, chilling, and marketing on behalf of their members, Agri producer groups have also made significant investments in offering a range of services to build loyalty among their members and encourage continued product supply.

139. A substantial **86%** of respondents indicated that they have accessed inputs such as commercial feeds through their respective Agri producer groups. The level of access varied slightly across counties, with **87%** of respondents in **Tharaka Nithi**, **81%** in **Embu**, and **82%** in **Meru** reporting such access. In addition to providing inputs, Agri producer groups are also offering **on-farm training** to their members, reaching **57%** of respondents. The highest engagement with on-farm training was observed in **Tharaka Nithi** at **61%**, followed by **60%** in **Embu** and **50%** in **Meru**.

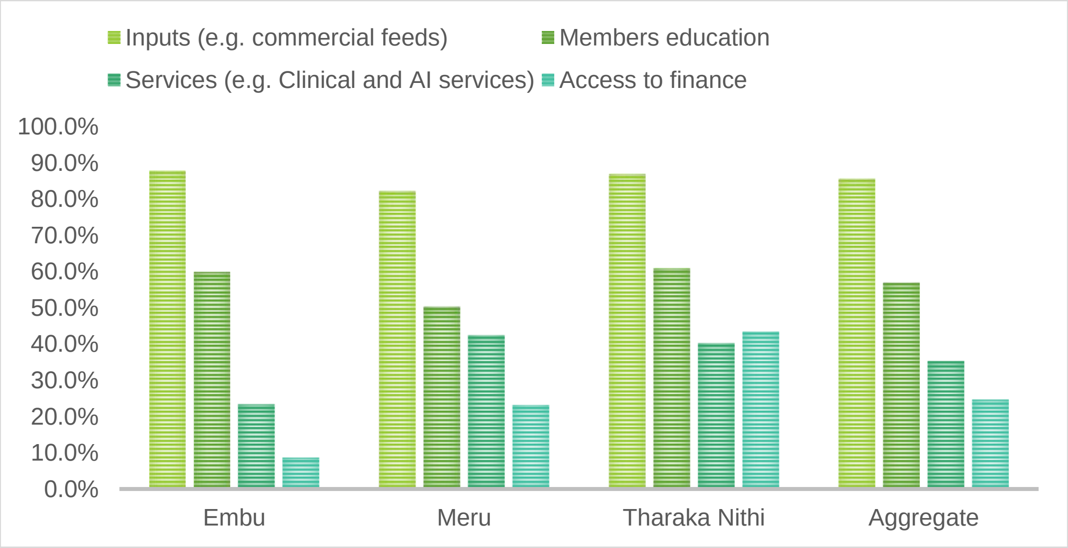

Figure 7: Embedded services provided by the Agri producer groups

140. Regarding **clinical and artificial insemination (AI) services**, **35%** of respondents reported utilizing these services, with the highest access seen in **Meru** (42%), followed by **40%** in **Tharaka Nithi** and **23%** in **Embu**. However, **access to finance** through the cooperatives was more limited, with only **25%** of respondents using these services. **Tharaka Nithi** had the highest access to cooperative-financed services at **44%**, while **23%** of respondents in **Meru** and just **9%** in **Embu** accessed financial support through their cooperatives.

141. A notable example of financial services provided by dairy cooperatives is the **Mt. Kenya Dairy Cooperative** in **Timau**, which offers financial support to its members through partnerships with financial service providers. The cooperative acts as a guarantor, allowing members to access short-term loans ranging from **KES 10,000 to 500,000**. This support has

enabled cooperative members to access much-needed capital to invest in their dairy businesses.

Household Milk spoilage

INDICATOR: Percentage of reduction in post-production losses (Farmer level) Reduced by 50%

Table 9: Percentage of reduction in post-production losses (Farmer level) Reduced by 50%

Indicator	Target	Baseline	MTE	Change against base	Male	Female
Percentage of reduction in post-production losses (Farmer level) Reduced by 50% - Current loss	50%	13%	7%	46%	47.47%	45.50%

142. The project targeted to reduce milk loss by 50%. At baseline, farmers were losing about 13% of their milk due to failed quality tests, at the milk collection centers. The MTE evaluation has shown that milk loss has reduced from 13% at baseline to 7% at MTE, representing a by 46% reduction.

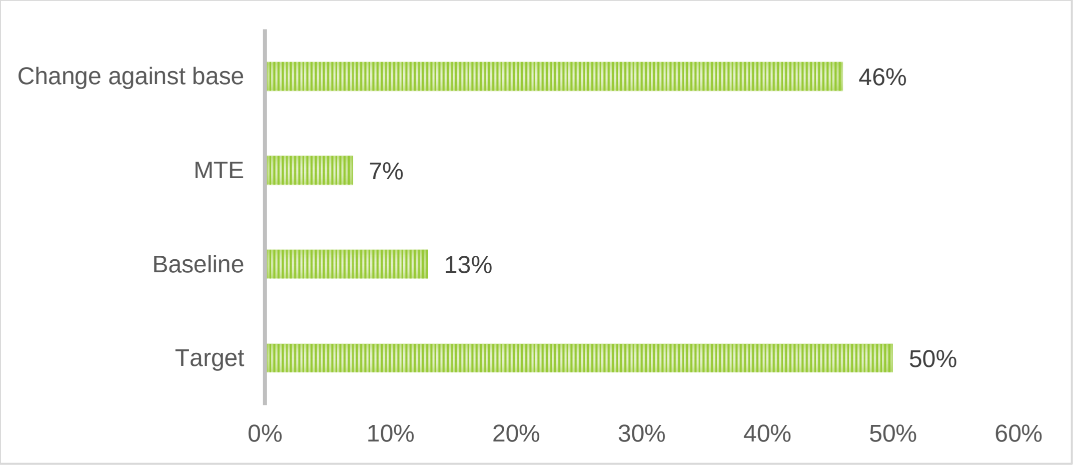

Figure 8: Percentage of reduction in post-production losses (Farmer level) Reduced by 50%

143. Milk spoilage at household level was measured through the proportion of milk rejected at the milk collection center. A number of preliminary tests are done at this level which include organoleptic and alcohol tests. The study noted that 17% of the households have experience milk rejections at the Milk Collection Centers (MCC) due to spoilage, with majority, 27% in Meru, compared to 13% in Tharaka Nithi and 10% in Embu.

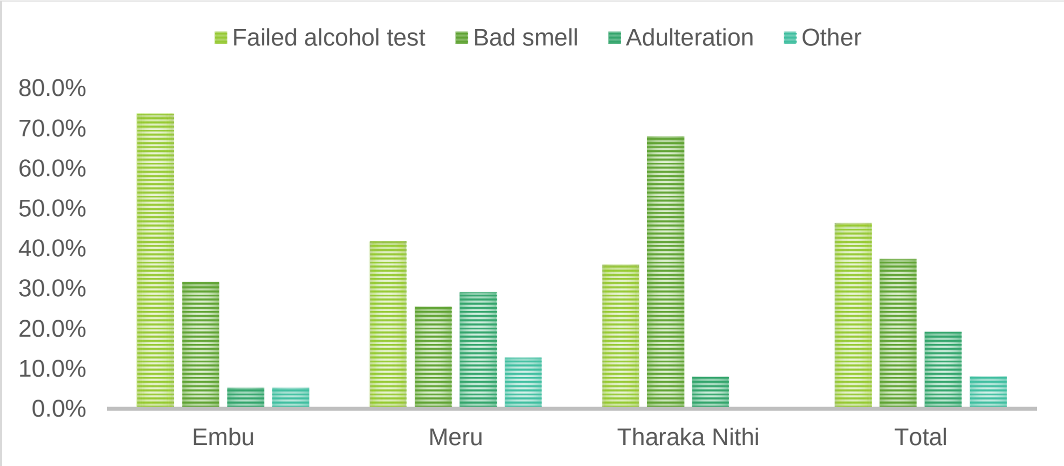

Figure 9: Reasons for milk rejection at farm level

144. The proportion of farmers reporting milk rejection at the milk collection centers were low, with only 10% reporting such cases, on quarterly basis with 14% in Meru, compared to 4% in Embu and 10% in Tharaka Nithi. Only 4% of the respondents have experienced milk rejection on a weekly basis due to spoilage, while 4% on monthly basis.

145. The reason for rejection was mentioned as failed alcohol test, which has affected 47% of the respondents, especially, 74% in Embu, compared to 42% in Meru and 36% in Tharaka Nithi. Bad smell is affecting 37% with majority, 68% in Tharaka Nithi, compared to 32% in Embu and 26% in Meru. Adulterations is prevalent among 19%, with majority, 29% in Meru compared to 8% in Tharaka Nithi and 5% in Embu.

146. Discussions with the farmers in Embu attributed milk rejections due to failed alcohol test to hygiene at household level and supply of evening milk, while in Tharaka Nithi, the farmers during FGD attributed this to poor transportation contains, with majority using plastic containers which are difficult to clean, compared to metallic cans, which is prevalent in Meru County. Due to the hilly nature of Tharaka and Embu, members of the cooperatives indicated that its risky transporting milk cans due to spillage due to frequent falling.

147. **Household Measures to reduce milk spoilage:** The study noted that household have adopted a number of measures to reduce milk spoilage. Majority of the households, 67% of the respondents are using recommended containers for milk transportation, with majority, 72% in Tharaka Nithi, compared to 66% in Meru and 63% in Embu. Cleaning of the milk areas is practiced as part of hygiene maintenance, is practiced by 63%, of which 75% are in Meru, while 53% in Embu and 44% in Tharaka Nithi.

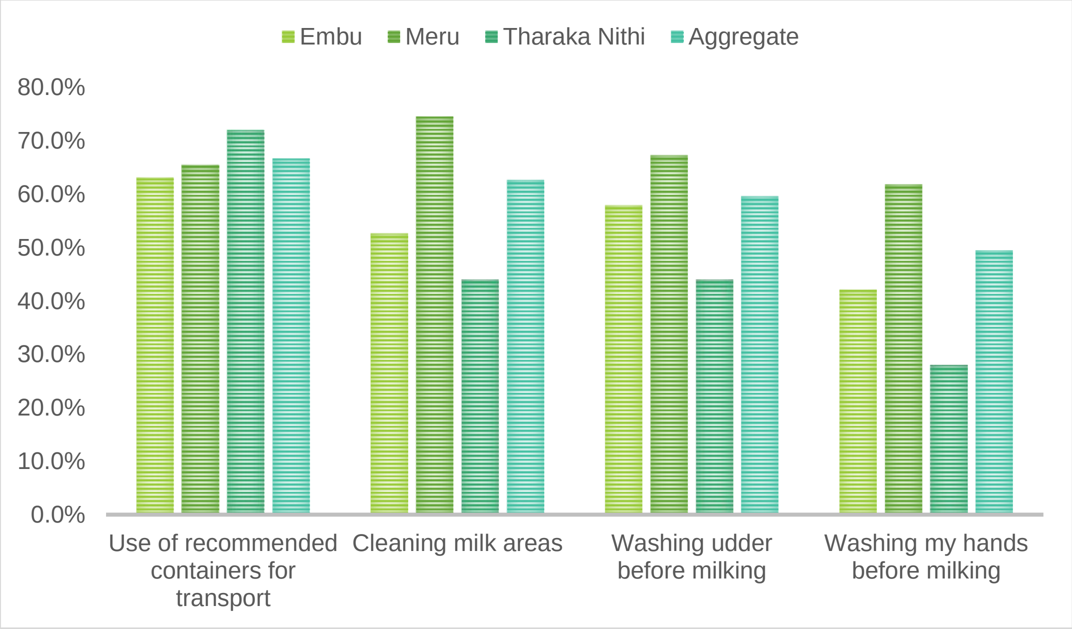

Figure 10: Household Measures to reduce milk spoilage

148. Washing udder before milking is practiced by 60% of the respondents, with majority, 67% in Meru, compared to 44% in Tharaka Nithi and 58% in Embu. Washing hands before milking was adopted by 50% of the respondents, with majority 62% in Meru, compared to 42% in Embu and 28% in Tharaka Nithi. Generally, majority of the households have adopted best practices at household level, to reduce milk spoilage.

149. Partnership with the Kenya Dairy Board (KDB) and sensitization through the radio has been instrumental in reducing milk spoilage. Discussion with the community, Agri producers and Kenya Dairy board indicated that there is need for intensified training at farm level. The Kenya Dairy Board mentioned that while ensuring farmers produce quality and safe milk is their priority, they are constrained with less staff and lack of funds to facilitate field travels. They therefore suggested that in future, such projects could consider providing DSA and transport to their staff to facilitate trainings on milk quality and safety. The sustainability of their request remains unclear.

RESULT 2: Agri-Producers Cooperatives leadership, management, accountability, storage and processing capacity reinforced.

150. **Evaluation question: To what extent the project strengthened the capacity of farmers entrepreneurs and respective cooperatives at the level of leadership, management, accountability, storage and processing**

151. **Demographic characteristics of Agri producer group respondents:** The MTE evaluation was able to reach, collect and collate data from 29 out of the planned 30 Agri producer

groups in the project. Among the 29 respondents, each representing a Agri producer group, 48% (14) were women while 52% (15) were male, indicating that more than half of the employees or leaders at the Agri producer groups are men.

152. Based on education level, 69% had attained tertiary level of education, with majority, 90% in Meru, compared to 50% in Tharaka Nithi and 67% in Embu. 31% had attained secondary level of education, with majority, 50% in Tharaka Nithi, followed by 33% in Embu and 10% in Meru. The high level of educations among the respondents showed that the information collected were from informed persons.

153. **Capacity development: The project invested in increasing the leadership through trainings, while at the same time, increased on the storage and processing capacity of the Agri producer groups.** The project targeted to reach 1,200 (12 leaders from 100 Agri producers) through training on governance and management of cooperatives/groups. The project collaborated with the department of the cooperative development, and department of social services to provide structured training which has streamlined leadership and management at the cooperative level thus making members to have confidence with the Agri producer groups. The department has also supported cooperative, SHG and CBOs, with developing frameworks for operations (Standard operating procedures) and also ensuring their annual general meetings are conducted accordance to the law.

The general management of their cooperative has improved due trainings on leadership and governance supported by the project. Members are now getting payments on time and there is increase of confidence of members towards cooperative management.
FGD, AMKENI dairy cooperatives

154. The project has supported the targeted 30 Agri producer groups to develop and operationalize viable business models. These business models included milk chilling, input provision and financial access and value addition. The planned matching fund will enable the Agri producers to invest in these business models. The project targeted at least 20 farmer organizations to be supported with matching grants to build their milk handling, storage and processing capacity through provision of basic infrastructure. To improve on the record keeping at Agri producer groups, the project has supported the leadership with ICT equipment's (Laptop and printers) while at the same time built their skills for digitization of records, to support the matching grant in the next phase of the project.

Indicator: Number of new businesses registered

155. The project has been able to reach 30 Agri producer groups with 3 CBO, 6 SHG and 21 cooperatives, all referred to as Agri producer groups. With the target of 30 Agri producer groups in this project, this indicator has been achieved. The breakdown of the 30 Agri producer were as follows: Three (3) community-based organization, located in Embu

County, while 21 were cooperatives societies, located in Embu (6), Meru (10) and Tharaka Nithi (5). Self-help groups reached were 6, one (1) in Embu and 5 in Tharaka Nithi.

Table 10: Number of new businesses registered

Indicator	Target	Baseline	MTE	Change against base
Number of new businesses registered	30	0	30	30

156. Generally, the CBOs made 7% of the Agri producer groups, while cooperative societies made 72% and Self-help groups made 21%. The CBO, SHG and the cooperatives were identified in collaboration with the County department of cooperatives, livestock and social services. The selection criteria were that none of the Agri producer group were engaged with another donor, reducing double dipping and in ability to attribute impact to this project.

157. **Membership Agri producer groups:** the MTE evaluation noted that the total membership among the Agri producer group, stands at 56,846 members, with 16,450 (28%) members being active. Among the active members, 44% (6,024) were male, while 56% (7,382) were female, indicating that women are playing a significant role in the dairy sector. The proportion of People living with disability ranged from 2 in Embu, to 40 in Meru and 31 in Tharaka Nithi, representing below 1% of the total active members. Discussions with group members in Embu indicated that there is still stigma around PLWD, on their ability to perform certain functions, leading to low participation. On average, there has been a 13% increase in membership, from 4,843 per county to 5,483 per county.

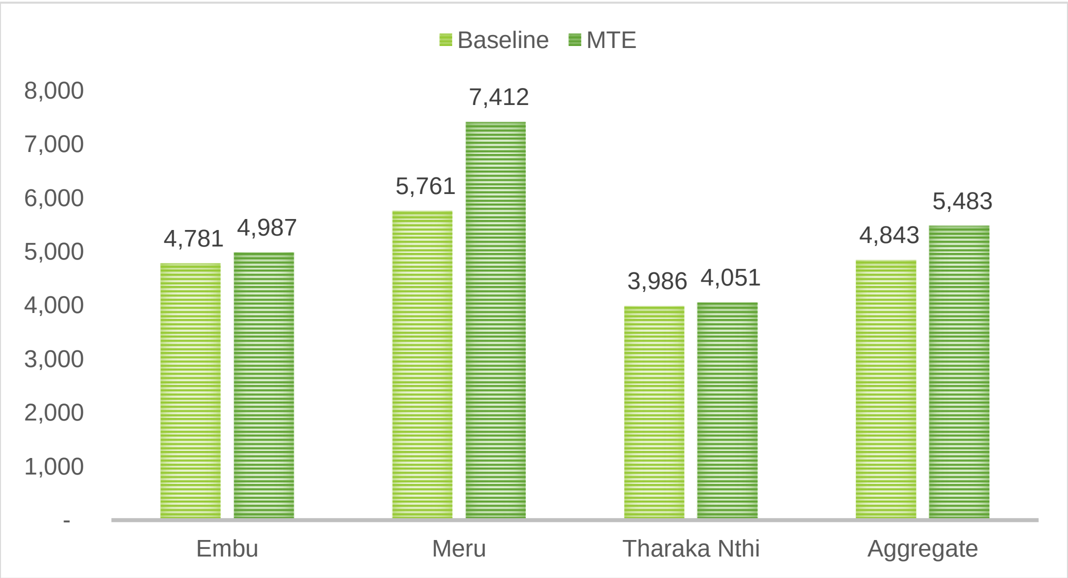

Figure 11: Membership among the Agri Producer at baseline compared to MTE.

158. Significant increase in membership was reported in Meru County, with 29% increase in membership, compared to 4% in Embu and 2% in Tharaka Nithi. Mt Kenya dairy cooperative

was awarded a prize (Trophy) for recording the highest increase in membership. This was attributed to improved services they are offering to their members, consistency in payment of the members and accountability, brought by digitization of their systems.

159. **Average Annual income among the Agri producer groups**

INDICATOR: Average income per month
INDICATOR: % Average increases their income by at least 25%.
INDICATOR: Percentage of enterprises (cooperatives) having increased income more than 25% by the end of the project

160. The project set a target for the **Agri Producer Groups** to generate **KES 6.1 million** by the end of the project, primarily from the sale of milk. The initial plan aimed to increase their annual income from **KES 3.6 million** to **KES 6.1 million**, reflecting a **59% growth** over the course of three years.

161. The **MTE** of the 29 Agri Producer Groups indicated that, on average, the annual income per group has increased by **62%**, generating an additional **KES 2,237,810** above the baseline, and is just **5% short** of the overall project target. This revenue growth can be attributed to several factors, including an increase in membership, which in turn boosted milk collection volumes. Additionally, there was a reduction in milk loss due to spillage and an overall increase in productivity at the farm level, enabling members to enhance their milk supply. Specifically, the project had projected that the income among the Agri producer groups, was to increase by 25% by the end of project. The study noted that the income from the agriproducer groups had increased by 37%, a 12% above the life of project target of 25%.

Table 11: Change in income among the Agri producer groups

Indicator	Target	Baseline	MTE	Change against base
Average income per month	6,120,000	3,600,000	5,837,810	62%
% Average increases their income by at least 25%.	25%	0%	62%	62%
Percentage of enterprises (cooperatives) having increased income more than 25% by the end of the project	70%	0	43%	43%

162. On the other hand, the project projected that by the end of its implementation, 70% of the Agri producer groups will have been able to increase their incomes by 70%. It was noted that only 43% of them have already been able to increase income by 25%. The diversity in business within the Agri producer groups is an indication of stability and sustainability. The study noted that on average, the FOAB has at least 1 business currently registered at the Agri producer group, which is mainly milk aggregation, chilling (with some) and selling to processors, or other traders.

163. On average, the Agri producer groups are making KES 5.83 million, with those in Meru County making an average of KES 7.59 million, those in Tharaka Nithi are making KES 2.95 million while those in Embu earn an average of KES 6.972 million per month.

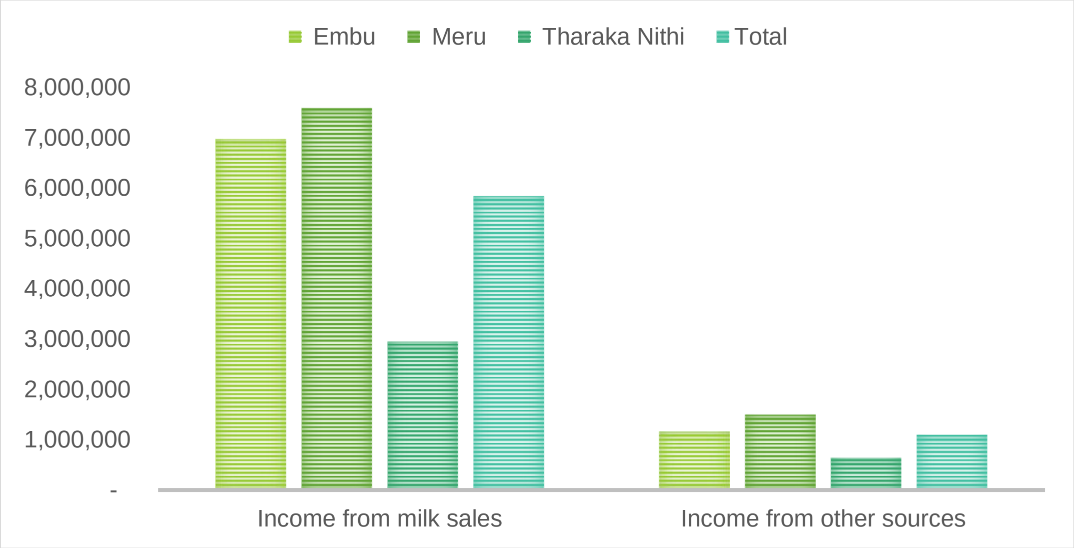

Table 12: Diversity in income among the Agri producer groups.

164. The Agri producer groups generates income from other sources, apart from milk business. The MTE study has noted that KES 1.1 million was generated from other sources, compared to KSE 5.8 million from the milk sales. Income from Milk and other sources was lower in Tharaka Nithi, compared to other locations.

Milk aggregation and marketing dynamics.

165. **Milk collection centers:** For efficient milk collection process, the Agri producer groups have set up milk collection centers across the catchment areas. Discussions with the Agri producer groups indicated that milk clerks manage these centers, and they are served (milk collection) by riders also caller porters. The milk porters earn about KES 2,400 per day from this business, creating a fulfilling and descent employment for the youth.

166. In total, there are 127 milk collection centers through which producers collect their milk for onward transportation to the cooperatives. Transportation is mainly through motorcycle and vehicles mainly by young men. The riders have been trained on preliminary quality assessments which include organoleptic and alcohol tests.

167. **Average Milk collection Per day per Agri producer group:** On average, each of the 29 Agri producer groups collects 4,394 litrs of milk per day, with the highest average of 5,453 lits per day from Embu, compared to 4.270 lits in Meru and 3,460 lits in Tharaka Nithi county. This has increased by 37% to 4394 lits per day. Significant increase has been noted in Embu, with an increase of 1%, followed by Meru by 23% and Tharaka Nithi, by 16%.

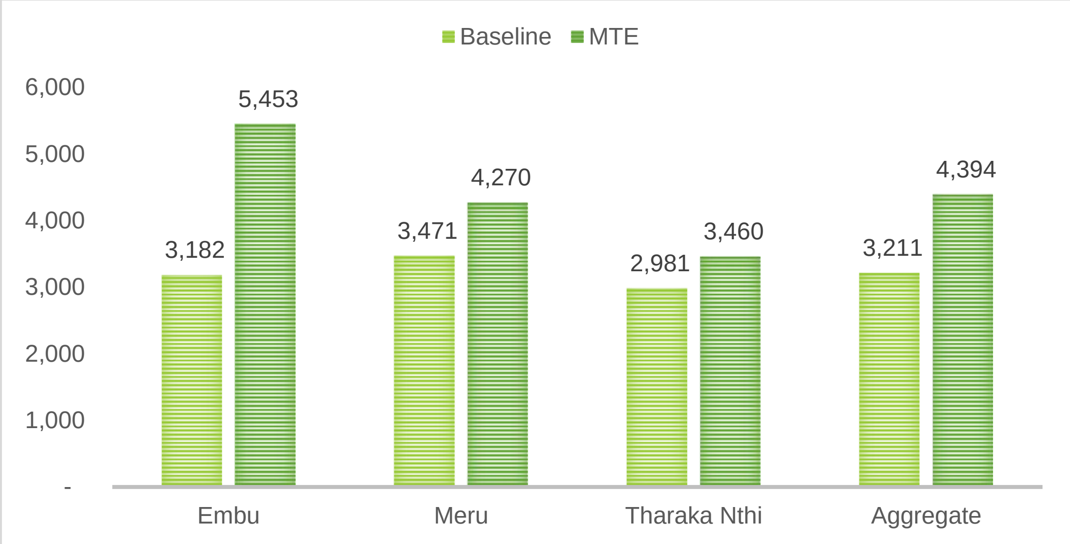

Figure 12: Average Milk collection Per day per Agri producer group

168. Discussions at the Agri producer group level indicated that the weather in 2023/24 has been conducive for dairy production, especially in access to fodder. This was mainly in the month of February to May when the region received higher than normal rains. Secondly, the increase in active membership by 12% from 4,843 at baseline to 5,483 at MTE. Thirdly, promotion of fodder production through input access (fodder seed) and preservation has enabled the households to feed their animals during the dry seasons. Lastly, the improved governance and the Agri producer group in terms of governance and management has incentivized community to join the groups, therefore increasing milk delivery. Other initiatives have been reduction in milk losses and improved data management at the group level.

169. **Marketing outlets for the Agri producer groups:** The study noted that 77% of the milk is sold to processors with 87% being sold to processors in Tharaka Nithi, while 79% was sold to processors in Embu, and 86% in Meru. Local market only takes 3%. The study further observed that 13% of the Agri producers undertake value addition to milk, with majority, 11% in Embu, compared to 10% in Tharaka Nithi and Meru respectively. 10% makes yoghurt, with no major differences across the counties in terms of those Agri producer groups making the product. The study noted that among the processors accessing milk from the Agri producers, Meru Dairy cooperative controls 72% of the milk market in the three counties, with all the milk, 100% in Meru is sold to Meru Dairy cooperative, compared to 50% from Tharaka Nithi and 67% from Embu County. Brookside controls 21% of the milk market, with Tharaka Nithi Agri producer groups delivering 40% while Embu deliver 22%. Only 7% of the Agri producer groups don’t sale to any processor, with 11% in Embu and 10% in Tharaka Nithi. The market outlet for groups such as AMKENI are institutions and neighbors.

170. **Milk processed at Agri producer level.**

INDICATOR: Percentage of increase of milk processed at the cooperative level

Table 13: Percentage of increase of milk processed at the cooperative level

Indicator	Target	Baseline	MTE	Change against base
Percentage of increase of milk processed at the cooperative level	30%	30%	37%	7%

171. The project targeted at sensitizing the agri producer groups to invest into milk processing. These could be through value addition into different products, as part of market segmentation. The study noted that there is a 7% increase in volume of milk being processed at the cooperative from an average of 3,211 lits at baseline (after COVID19) to 4,394 at MTE.

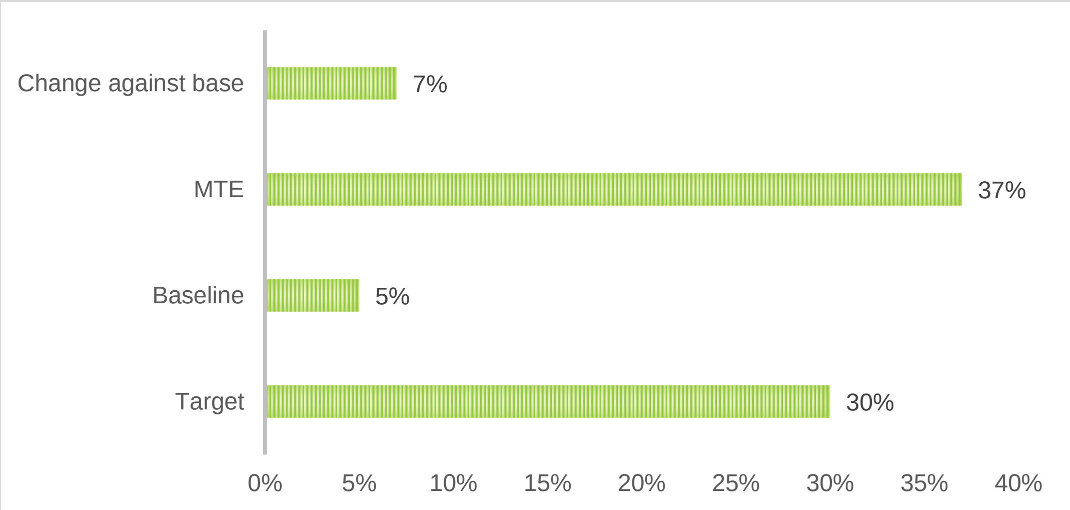

Figure 13: Milk loss due to spoilage and spillage.

172. The project overall target was to process 30% of the milk. They have therefore surpassed the target by 7%. The increase in volumes of milk being processed was due to increased daily collection, which has been catalyzed by increase in membership at the Agri producer groups. The increase in membership and therefore increase in milk supply was due to improved accountability at the Agri producer groups, based on the training support from the project and its partners.

INDICATOR: Percentage of reduction in post-production losses (Cooperative level). Reduced by 50%

173. Post-production losses are associated with spillage and spoilage incidences. The project targeted to reduce milk spoilage at the cooperative by 50% at the end of the project. At baseline, the Agri producers were losing 1% of the milk, compared to 0.6% at MTE. Only 0.5% is lost due to spillage. The loss in milk due to spoilage translates to 40% reduction,

against the 50% project target. The reduction has been due to initiatives at the farm and agri producer group level, in monitoring milk quality. The milk porters have been trained on preliminary milk quality assessment, while farmers have been trained on quality feed production, in a total mixed ration, best milk and herd handling methods and transportation of milk to the milk collection centers.

Table 14: Percentage of reduction in post-production losses (Cooperative level). Reduced by 50% - Current loss

Indicator	Target	Baseline	MTE	Change against base
Percentage of reduction in post-production losses (Cooperative level). Reduced by 50% - Current loss	50%	1%	0.6%	40%

174. On average, 789 lits of milk is lost on monthly basis from the 29 agri producer groups, representing 0.60% due to spoilage, while 0.5% (789 Lits/day) is lost due to spillage. Milk loss due to spoilage was higher, 0.88% in Meru, compared to 0.66% in Embu, and 0.16% in Tharaka Nithi.

As cooperative we incur an average loss of 200 litres of milk per day at a processor point with main reason being the distance from collection point to processor, however, the project tends to address this challenge by provision of 50% marching grants for the purchase truck which will facilitate easy transportation of milk.

Abraham Muriuki Imathiu,
Mt Kenya East Cooperative

175. In the past 12 months, 59% of the Agri producer groups have reported that their milk has been rejected, with majority, 90% in Meru, compared to 60% in Tharaka Nithi and 22% in Embu. Significant losses have been due to distance to the processors chilling facilities. Due to high milk loss in Meru and given that 100% of the Agri producer groups in Meru supply to Meru Dairy cooperative, the cooperative has started investing in establishment of satellite chilling sites, with cooperatives being clustered together, to reduce distance and time taken in milk transportation.

Reasons for milk spoilage

176. The study evaluates the reasons for milk rejection by processors. 65% of the Agri producer organizations mentioned poor hygiene, with majority, 78% in Meru and 67% in Tharaka Nithi. Mastitis (CMT) as a course of milk rejection was reported by 35%, with majority, 44% in Meru and 33% in Tharaka Nithi, while another 35% reported adulteration, mainly in Meru and Tharaka Nithi. As mentioned earlier, hygiene at farm level, which included shed cleanliness, that of the milking person or the equipment's are the main contributing factors to milk quality deterioration. 35% of the Agri producer groups mentioned that by lacking chilling facility, they are not able to accept evening milk, which most of the farmers then mix with evening milk and deliver to the cooperative. Lack of proper cold chain is also a

challenge, as the milk is delivered directly to the processors upon collection. reduce bacterial count in milk, leading to poor quality. 29% of the agri producer groups complained that processors delay in collecting milk on time, due to bad roads.

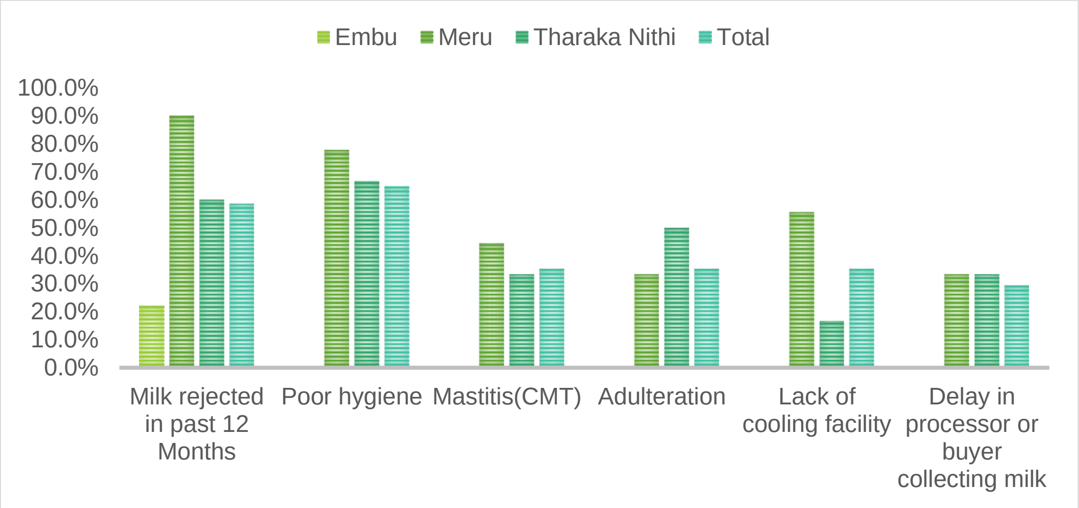

Figure 14: Proportion of milk rejected and the reasons for rejection at Agri producer group level

177. The Agri producer organizations mentioned that on average, their milk has been rejected on monthly basis, as mentioned by 17% while another 17% have reported milk rejection on weekly basis and 10% on daily basis. 11% of the Agri producer groups in Embu reported that their milk is rejected on annual basis and semiannually respectively.

Milk quality determination

178. The Agri producer organizations have invested in systems to monitor milk quality. 90% of the Agri producer organizations use lactometer to test adulteration used test, while Alcohol test is done by 86%. Organoleptic tests are done by 48%, with majority, 88% in Embu, 10% in Meru and 50% in Tharaka Nithi. Only 17% did Resazurin test, with majority, 30% in Tharaka Nithi and 22% in Embu. The Agri producer groups has adopted a number of milk handling, cooling, storage or processing equipment. A significant proportion, 97%, are using aluminium cans, while 62% have coolers, with majority, 89% in Embu, compared to 70% in Tharaka Nithi and 30% in Meru. 17%, mainly in Tharaka Nithi (40%) and Embu (11%) have pasteurizers

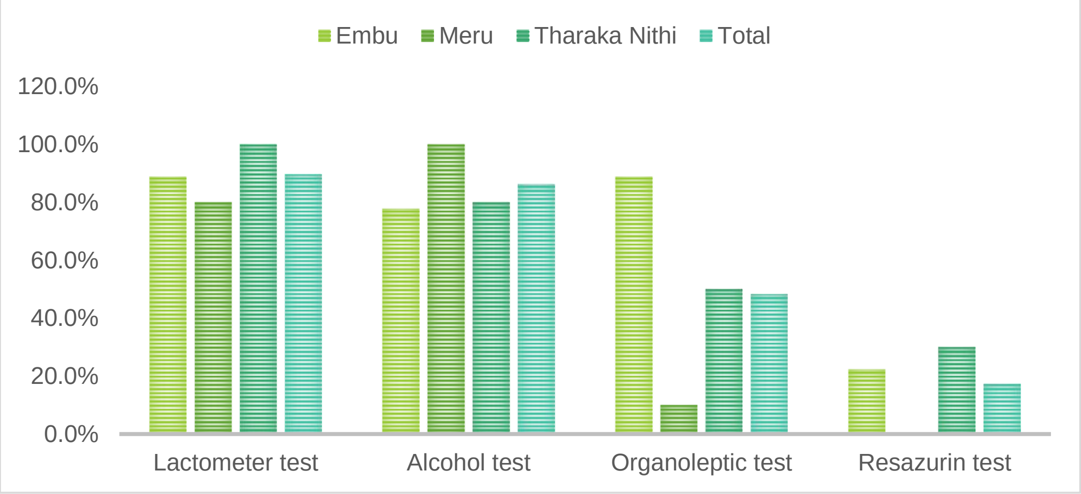

Figure 15: Milk tests undertaken at the Agri producer level

Challenges affecting the Agri producer groups

179. The study noted a number of challenges affecting the Agri producer groups. Low processing and chilling capacity at the Agri producer groups is a major challenge affecting 69%, more so, in Embu (77%), followed by 70% in Embu and 60% in Meru.

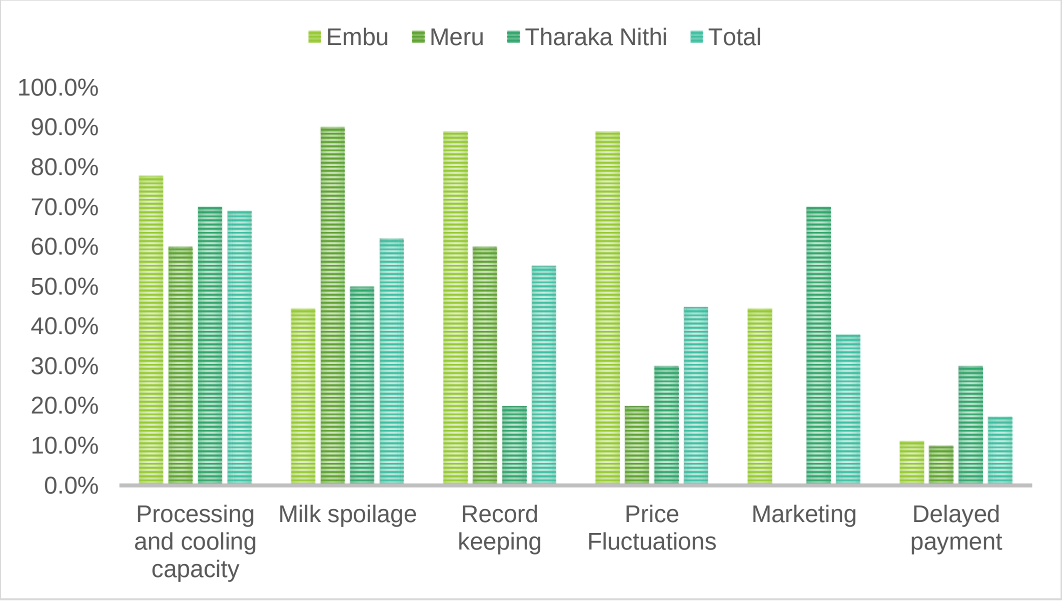

Figure 16: Challenges affecting the Agri producer groups

180. The project has planned for a matching fund to unlock this challenge, which has proposed by majority of the groups. Meru dairy cooperative is also investing in centralized collective chilling facility, reaching a number of cooperatives per location. This is reducing the distance to the main processing facility in Meru.

181. The second challenge identified is milk spoilage, which affects 62% of the producer groups, with the highest prevalence observed in Meru (90%), followed by Tharaka Nithi (50%) and Embu (44%). The significantly high spoilage rate in Meru may be attributed to the fact that producers in this region sell nearly all of their milk to the Meru Cooperative Union, which enforces stringent quality control standards. This focus on quality could result in higher rejection rates for milk that does not meet the Union's standards, thereby increasing spoilage.

182. Milk price fluctuation is a significant challenge for 45% of the groups, while 38% identify marketing as a key concern. The pronounced price fluctuations in Embu appear to be driven by market instability, highlighting the urgent need to focus on strengthening the cooperative union. By enhancing the union’s capacity, the bargaining power of producers could be significantly reinforced, enabling them to negotiate more favorable prices with processors and buyers. Additionally, fostering business agreements and long-term contracts between producers and stakeholders could contribute to stabilizing milk prices, ensuring a more consistent and sustainable income for dairy farmers.

Agri producer group governance and management systems

Provision of embedded Business services

183. Apart from milk aggregation and chilling, the Agri producers also provide other relevant services. The study noted that 93% of the Agri producer groups provides input, specifically commercial feed sale, with majority, 100% In Meru, while 90% in Tharaka Nithi and 89% in Embu. Provision of member education such as training is provided by 76% of the FOAB, with majority, 90% in Tharaka Nithi, 70% in Meru and 67% in Embu. 52% are providing animal health services, with majority, 67% in Embu, 40% in Meru and 50% in Tharaka Nithi.

Table 15: Provision of embedded Business services by the Agri producer groups

Business services	Embu	Meru	Tharaka	Aggregate
Inputs (e.g. Commercial Feeds)	88.9%	100.0%	90.0%	93.1%
Members education	66.7%	70.0%	90.0%	75.9%
Services (e.g. Clinical and AI)	66.7%	40.0%	50.0%	51.7%
Access to Finance (e.g. Credit)	11.1%	10.0%	80.0%	34.5%
Welfare for members	11.1%	0.0%	0.0%	3.4%

184. 35% of the Agri producer provides financial services, with majority, 80% in Tharaka Nithi, 11% in EMBU and 10% in Meru. Only 3% provides welfare services to its members, mainly in Embu (11%), while 7% don’t provide any services, with majority, 11% in Embu and 10% in Tharaka Nithi. Welfare services include benevolent incase on of the member has reported a death case within their household, education and health services access funds. The ability

of the groups to provide embedded services was determined by access to finance to invest, and capacity of the board to manage such services. In some cooperatives, the management are sourcing services such as financial services, with financial institutions.

185. **Complaints and grievances handling mechanism:** The study assessed the perception of **Agri Producer Group** representatives regarding the existence of effective mechanisms for handling members' complaints and grievances. The findings indicated that 59% of the respondents agreed with the statement that such systems and mechanisms are in place, while 28% strongly agreed. Notably, all respondents in Embu and Meru either agreed or strongly agreed with this statement, whereas 60% of respondents in Tharaka Nithi expressed agreement.

186. The study further assessed the mechanisms that the Agri producer groups has put in place to collect members' and stakeholders' complaints and compliments. 72% of the respondents indicated that such mechanisms have been put in place during annual general meetings, while 60% indicated that office leadership are open to and accepts complainants positively, while 52% have put in place a help desk to receive such complaints especially in Embu (100%), Meru (30%) and Thara Nithi (17%). About 36% have put in place a complain register file at the office, while 4% especially in Embu, have a suggestion box.

187. **Conflict Management/problem-solving techniques:** On conflict Management and problem-solving techniques applied by the Agri producer groups, 76% of the respondents agreed that there are such systems in place, with majority, 89% in Embu, compared to 80% in Meru and 60% in Tharaka Nithi. 10% strongly agreed with the statement, with majority, 30% in Tharaka Nithi. Generally, 86% of the responded agreed to strongly agreed that the Agri producer groups have systems in place for conflict resolution. Dialogue is the most used method as mentioned by 96% of the Agri producer groups. Sending a warning to the culprit is applied by 75%, while penalties on those who have made mistakes is done by 38% especially in Meru, while expulsion of members is done by 33% of the Agri producer groups, with majority, 50% in Meru, 43% in Tharaka Nithi and 11% in Embu. Use of intermediaries is applied by only 3% of the Agri producer groups, mainly in Embu

188. **Application of Risk management practices:** as to whether the cooperatives are following and applying the Risk management practices, 55% of the respondents agreed, especially in Embu as reported by 77% compared to 60% in Tharaka Nithi and 30% in Meru. Among the risk management practices followed by the Agri producer groups, implementation of the approved budget is applied by 89%, followed by enforcement of business contracts as reported by 44%, while 39% follow data backups to mitigate data losses. 17% apply succession plans whenever there are elections of new official while 11% have in place a risk engagement policy. Among the Embu Agri producer groups, implementation of the approved

budget is the most followed by 88% of the Agri producer groups, while in Meru, adoption of data backups is used by all the Agri producer groups.

189. The study noted that all the Agri producer groups interviewed have held AGM in the past 2 years and therefore are compliant to the CBO, SHG (Social services) and Cooperative act requirement, against this, 86% confirmed that the AGM were done on time, with all the Agri producer groups in Meru confirming this, compared to 80% in Tharaka Nithi and Meru respectively.

190. The respondents were interrogated on their perception on adherence to the governance code of conduct and ethics. The study observed that 55% agreed, with majority, 60% in Meru, followed by 56% in Embu and 50% in Tharaka Nithi, that they adhere to governance code of conduct. 17% strongly agreed with this statement. Generally, 72% of the Agri producer groups agreed to strongly agreed with the statement.

191. The study noted that 82% of the respondents agreed that financial statements are prepared and audited every year, with majority, 100% of the FOAB in Meru, compared to 70% in Tharaka Nithi and 77% in Enbu. As to whether they felt that the Cooperative/organization is well audited, 83% confirmed that yes, it’s well audited, with majority, 100% in Meru, followed by 78% in Embu and 70% in Tharaka Nithi.

192. **Agri producer group Management and policies:** As to whether there is clear separation of duties and responsibilities between the Supervisory Committee and Management Committee within the Agri producer groups, 45% agreed, while 24% strongly agreed. Majority of those who strongly agreed to agree (80%) were in Meru, compared to 78% in Embu and 50% in Tharaka Nithi. As to whether there is clear separation of duties and responsibilities between the Management Committee and Staff, 48% agreed while 31% strongly agreed. Generally, 79% agreed to strongly agree, with majority, 100% in Embu, 90% in Meru and 50% in Tharaka Nithi. The study has noted that there are challenges with regard to separation of duties among the Agri producer groups in Tharaka Nithi, which require specific interventions on governance.

193. **Agri producer group on policies:** The study interrogated the proportion of Agri producer groups with policy documents that guide their operations. It was noted that 55% of the FOAB lack any policy, with majority, 67% in Embu compared to 50% in Meru and Tharaka Nithi respectively. Against this, the study noted that 28% of the Agri producer groups have membership policy, while 24% have HR policy, 10% have finance policy, while 10% have credit policies. ICT policy has been developed by 7% of the Agri producer groups, while less than 4% have risk management, child protection and sexual harassment policy. Most of the policies, ICT, Risk, child and sexual harassment are found among 11% of the Agri producer groups in Embu and only 10% in Tharaka Nithi have ICT Policy.

The most relevant on-going and future actions reported by the KIIs that will enhance the effectiveness of the Agri producer groups are the following:

194. **Youth inclusion:** Agri producer groups plan to integrate youth activities into the dairy sector. Some of the proposed initiatives will be to train youth on milk handling in order to tap on the available market within Embu town. They are also planning to have a clear board of management led youth.

195. **Establish a demonstration farm:** A number of Agri producers plan to establish a dairy demonstration farm through which farmers can come to learn. Mt Kenya Dairy in Timau, alluded to this saying that such a farm will have improved cows and managed professionally. Farmers will be able to see technologies such as hay bailer, silage making machines and best practices for their farms.

196. **Build an efficient milk collection systems while at the same time, increasing milk chilling capacity:** Respondents indicated that investing in milk transportation will improve milk delivery and transportation systems, reducing spoilage. This will mean investing in vehicles and motorcycles for milk transportation. On the other hand, with increased volumes due to efficient transportation, there is need to invest in improved storage and chilling capacity. Most of the cooperatives agree that a central cooling centres will be more effective than each cooperative having its own chilling facility.

197. **Digitisation of the cooperative operations:** System digitisations has enhanced accountability and efficiency among the Agri producer groups. The use of digital weigh scale among others has built trust between the cooperatives and the suppliers. Other opportunities include payment systems, loan access and input access. Most of the Agri producer groups therefore envision a paperless system in future through adoption of digital applications.

Gender and social inclusion at Agri producer groups level

INDICATOR: Percentage of cooperatives with women and/or youth in leadership position.

198. The project targeted that 75% of the women and youth are holding leadership positions at the Agri producer groups. While at the baseline, the proportion of women and or youth in leadership position were 6%, the study indicates that the numbers has increased by 42% to reach 48% at MTE of targeted cooperatives with women and/or youth in leadership position

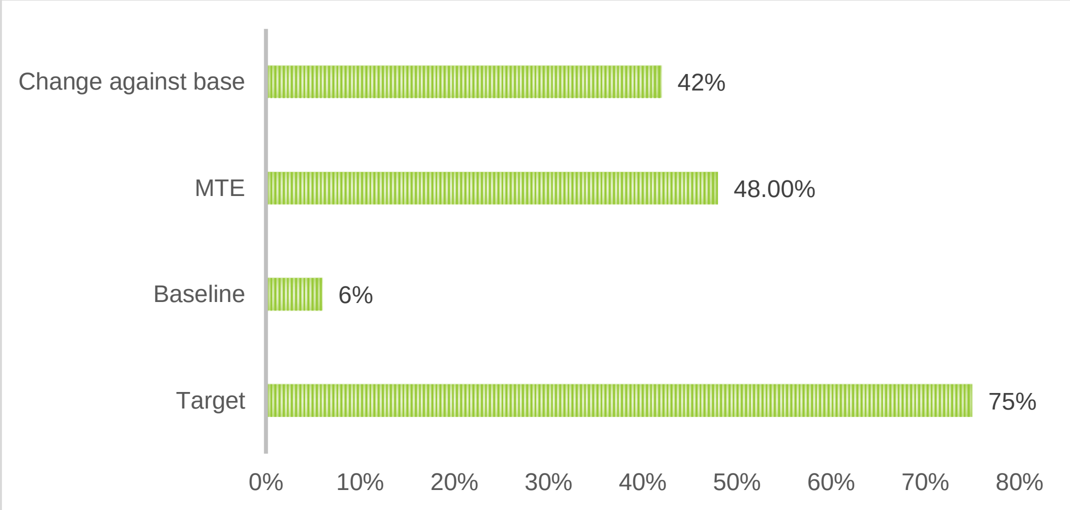

Figure 17: Percentage of cooperatives with women and/or youth in leadership position.

199. **Diversity in leadership positions:** In total, the 29 Agri producer groups are managed by 291 leaders, with majority, 111 in Tharaka Nithi, followed by 88 in Meru and 81 in Embu. Of these, 70% of them are male, while 30% of them are female. More women, 38% were found in Meru, followed by 27% in Embu and 23% in Tharaka Nithi. The proportion of youth in leadership is still low, at 3% across all the counties, Meru recorded the lowest proportion of youth in their board, represented by 1%, followed by Embu, by 2% and Tharaka Nithi by 5%. ANKAMIA cooperative chairperson indicated that as a cooperative, they have directly mobilised women, youth and vulnerable to join leadership and management committee. Currently the cooperative has 11 women and 3 youths at leadership position. Sensitisations have been on going, on the importance of joining leadership and management committee.

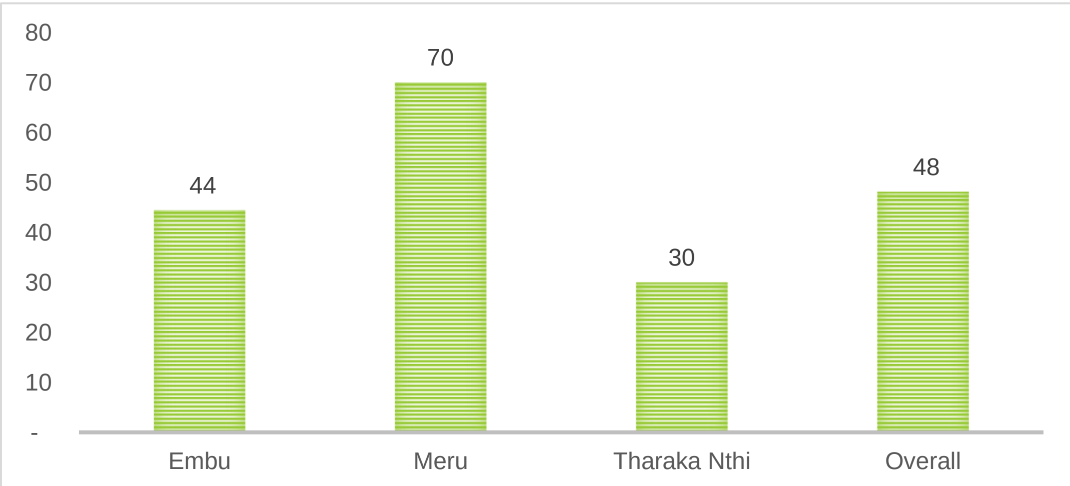

Figure 18: Proportion (%) of Producer groups with women and/or youth in leadership position (30% and above)

Gender and social inclusion at Agri producer household level

200. **Decision regarding use of income from dairy enterprise:** The study noted that 48% of women are currently making decisions on their own and jointly with their spouses, while only 21% men and 31% women make such decisions on their own. The study noted that joint decision making by both spouses on income from dairy enterprises, was higher in Tharaka Nithi, as reported by 58%, compared to 44% in Embu and Meru respectively. More men, 25% are making such decisions in Meru, compared to 21% in Embu and 17% in Tharaka Nithi. More women. 36% in Embu are making such decisions, compared to 26% in Tharaka Nithi and 32% in Meru.

201. Generally, decision making by either both and with women, was higher, 83% in Tharaka Nithi, compared to 79% in Embu and 75% in Meru. The study has noted that there was a general higher women participation in Tharaka Nithi, compared to women. In Meru, majority of men are paying bills, making decisions, which correlates well with high proportion of men headed households. The low women participation in Meru was associated with norms and traditions. Discussions with community in Meru indicated that even when a woman makes such decisions, she cannot discuss them outside the homes that she is the one who made them, as respect to the husband.

202. **Sharing of bills at household level:** When it comes to household expenditures, both the father and mother shares the bills, as mentioned by 37% of the respondents, with majority, 41% in Embu, followed by 38% in Tharaka Nithi and 32% in Meru. It has been noted that more fathers in Meru, 41% are meeting the household expenditures, compared to 34% in Embu and 37% in Tharakja nithi, while, more women, 27% are also paying such bills in Meru, compared to 25% in Embu and 24% in Tharaka Nithi. These statistics concurs with the finding on who make the decisions at households' level. It was observed that in Meru, joint decisions and or by woman, is lower than other counties, indicating that men still make such decisions, and therefore pays most of the bills. Where we have high proportion of joint decision, the payment of the bills is also done jointly. Women indicated that even when they pay for certain expenditures, they will not tell people that they are the ones who did so for the respect of their spouses. Men continue to take centre stage in decision making in Meru as result of traditionally beliefs that men should be the head and providers to the family. Even with the trainings on gender, this culture has not been left fully.

203. **Family division of labor:** Division of labor is important within the household, indicating time availability for economic activities among different members within the household.

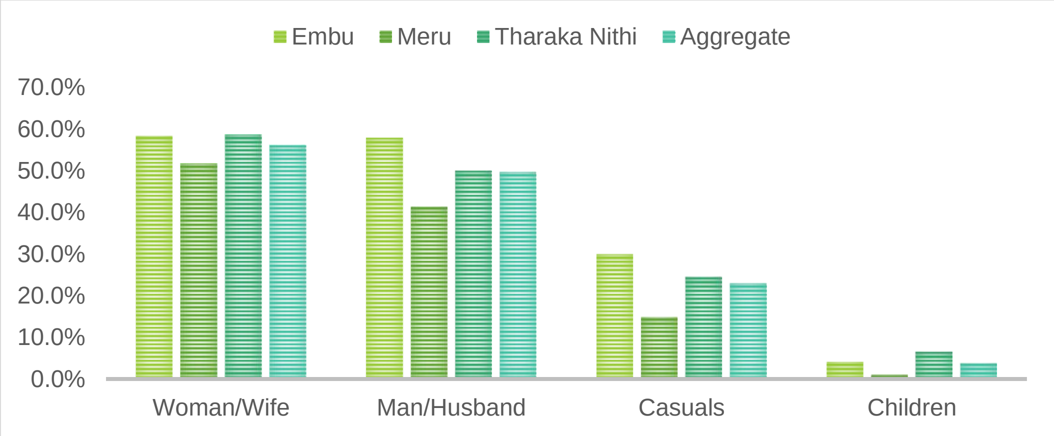

Figure 19: Division of labor among the family members at household level

204. The study indicated that 56% of women or mothers or wife within the households are the ones tending to dairy activities, while 50% of men participate. In households where casuals are engaged, 23% indicated that they, the casuals are the ones who tend to dairy activities, while 4% children participate. The use of casuals is higher in Embu as reported by 30% compared to 25% in Tharaka Nithi and 15% in Meru. This shows that while in Meru majority of the dairy activities are done by household members with minimal casual engagements, both Embu and Tharaka Nithi have engaged more casuals.

205. **Access to Livestock feeds:** The source of dairy meal is important within the dairy producing household as it's the most important input. The study noted that majority of the participants, 77% source dairy meal, with majority, 88% in Meru, compared to 78% in Embu and 68% in Meru. Those who undertake on-farm feed formulations are 23%, with majority, 32% in Meru, compared to 22% in Embu and 13% in Tharaka Nithi. Asked whether they conserve fodder, 41% confirmed, with majority, 45% in Tharaka Nithi, compared to 41% in Embu and 37% in Meru. While 87% of the respondents make their own home-made fodder, with majority, 98% in Embu, compared to 88% in Tharaka Nithi, and 74% in Meru, only 17% use commercial fodder, purchased from input service provider.

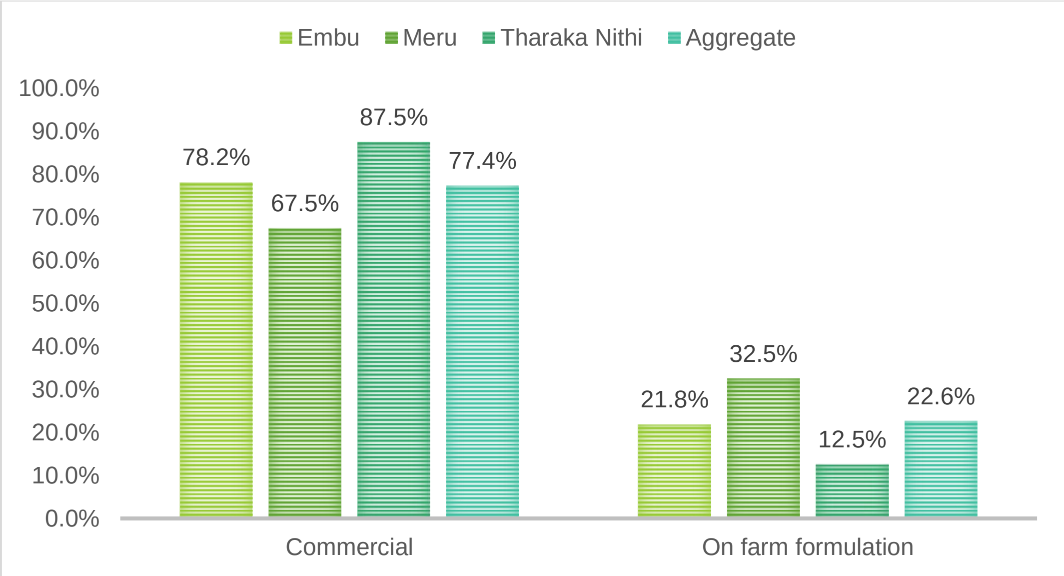

Figure 20: Sources of livestock feeds among the respondents

206. The study further noted that majority of the respondents, 73%, use the fodder in form of hay, with majority 74% in Meru, compared to 77% in Tharaka Nithi, and 69% in Embu. 34% uses fodder in form of silage, with majority, 43% in Embu, compared to 26% in Tharaka Nithi. On average, households use 62 bales in a year, with high utilization of 117 bales in Embu. The amount of silage used hit an average of 205.5 tons per year, with high utilization of 810.1 tons in Meru, and 106 tons in Embu. The study noted that home formulation of dairy feeds has not been adopted by majority of the households across the three counties, leading to increased utilization of commercial dairy feeds. On the other hand, home making fodder has been adopted, majority, utilizing the products in form of hay.

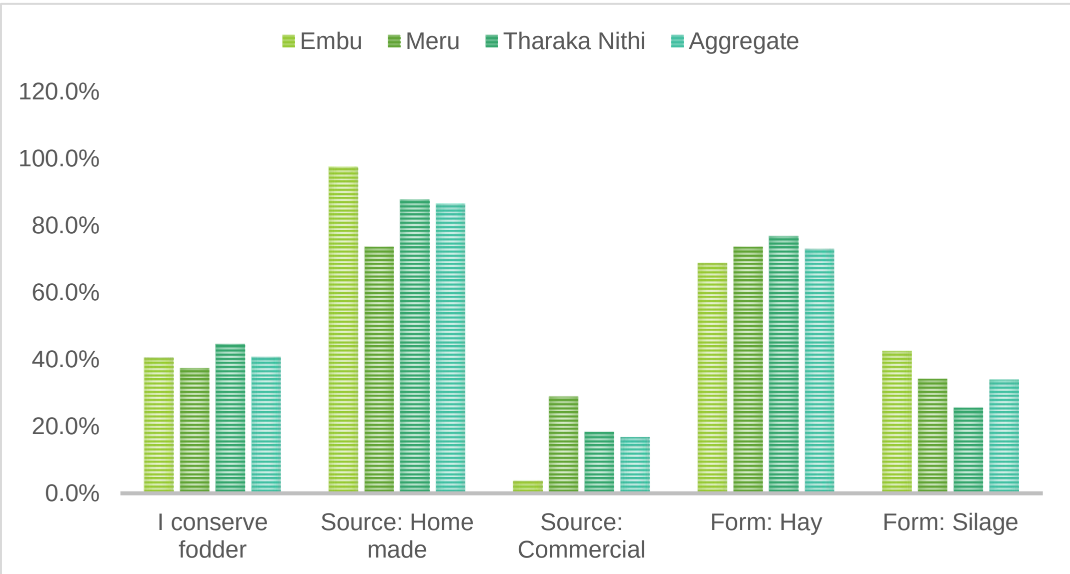

Figure 21: Household fodder production and conservation methods

Business Models and adoption of ICT in operations

INDICATOR: % of cooperatives having business models.

INDICATOR: Percentage of cooperatives implementing their business models.

Table 16: Percentage of cooperatives implementing their business models.

Indicator	Target	Baseline	MTE	Change against base
% of cooperatives having business models.	60%	17%	20%	3%
Percentage of cooperatives implementing their business models.	60%	13%	34%	21%

207. The study noted that the project target on proportion of cooperatives with business models was 60%. The baseline indicated that only 17% have business models, which has increased by 3% to 20% at MTE.

208. On the other hand, the proportion of cooperatives, who have business models and are implementing them were 34% (of the 20% who have the models) at MTE, indicating a 21% increase from a baseline of 13%.

209. Those with business models in Embu were 21%, compared to 20% in Meru and 20% in Tharaka Nithi. Among those who have operationalized their business models, non was noted in Embu, while 1% were in Meru and all the Agri producer groups in Tharaka Nithi, are implementing their models,

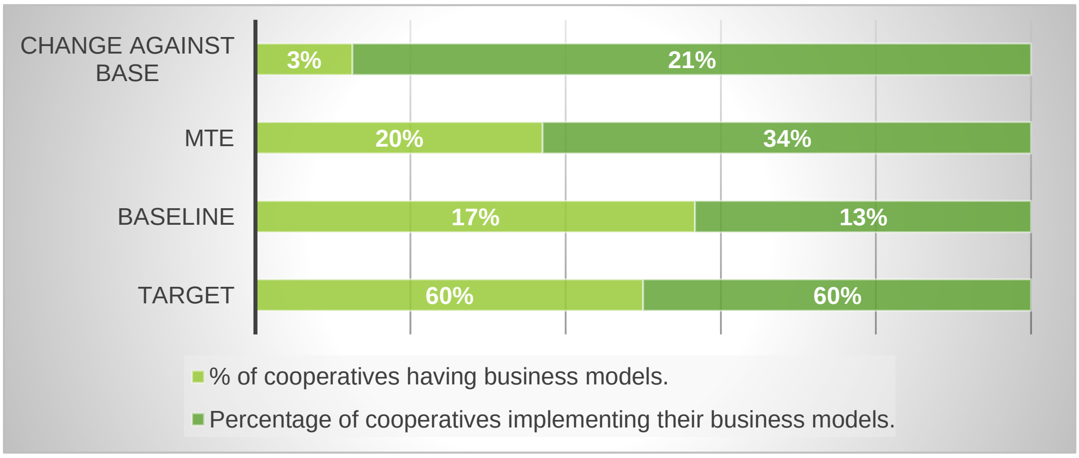

Figure 22: Percentage of cooperatives with and those implementing their business models.

210. **Record Keeping at Agri producer groups**: The Agri producer groups keep a number of records, which include membership record, which is maintained by all the Agri producer groups across all the counties, while 97% keep production records. 89% of the Agri producer groups in Embu keep production records. Equivalent proportion, 97%, keep income records, with only 90% in Meru keeping such records. Another 87% keep expense records, with 90%

of Agri producer groups in Meru keep such records. Other records kept by the Agri producer groups include assets, farmer trainings, inputs, Management committee meeting records, payment records, stock records, and transport records. Among the Agri producer groups keeping records, 24%, keep them in hardcopy, while 76% keep them in both hard and soft copy.

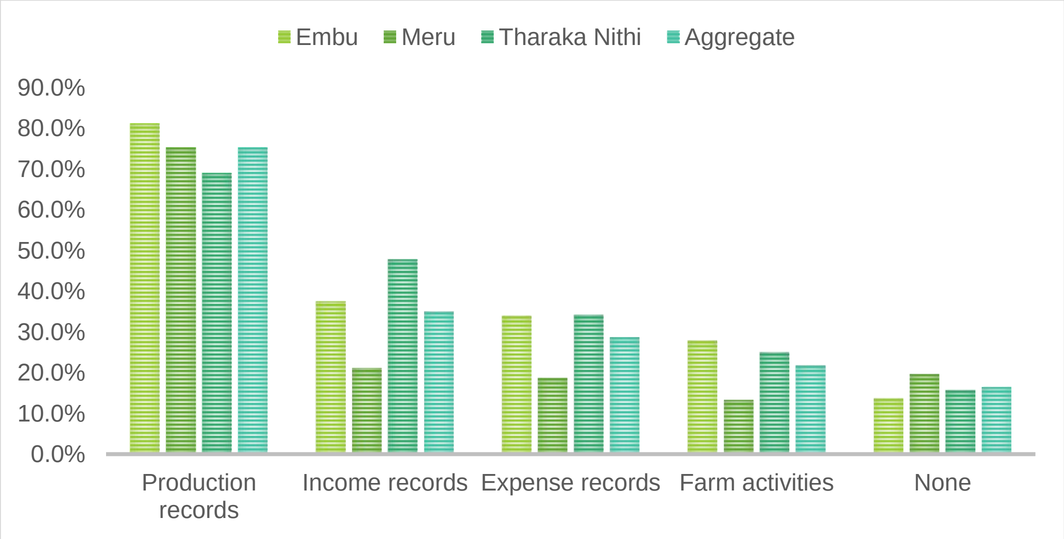

Figure 23: Proportion of smallholder farmers keeping records at household level

211. **Record Keeping at household level:** The study noted that 75% of the respondents keep production records, while 35% keep income records, while 29% and 22% keep expenses and farm activity records. Participants in Embu have adopted production related record keeping as reported by 81% compared to 75% in Meru and 69% in Tharaka Nithi. Keeping Income records is more practiced in Tharaka Nithi, as reported by 48%, compared to 38% in Embu and 21% in Meru. Generally, record keeping is low in Meru among the households compared to the Embu and Tharaka Nithi. The need to keep production record is higher as the households need to track on their supply to the Agri producer groups and therefore putting more emphasis on this, compared to other options.

Diversity in employment opportunities

INDICATOR: Number of new jobs created along the value chain

212. The project targeted that at least 500 new jobs will have been created as a result of the project interventions. As at MTE, 387 new jobs had been created.

Table 17: Number of new jobs created along the value chain

Indicator	Target	Baseline	MTE	Change against base
Number of new jobs created along the value chain	500	709	387	387

213. In total, the 29 Agri producer groups has provided employment to 387 employees, with majority, 176 in Meru, and 120 in Tharaka Nithi, compared to 91 in Embu. Among the employees, 69% are male, while 31% are female. The proportion of youth among the employees is 33% across all the counties, with majority, 43% in Meru, compared to 19% in Tharaka Nithi and 33% in Embu. Generally, women and youth representation at the board level and employment positions are still low across all the counties. Other employment opportunities are in milk transportation and marketing being done by youth. Based on the Key informant group discussions, the average number of youths in milk transportation business ranges between 4-5, with an average of 4. This indicates that about 120 youths have gained employment from milk transportation alone.

Digitization of data management software and backup

Indicator: Percentage of cooperatives with digitized records.

214. The study noted that 62% of the Agri producer groups have a data management software, with majority, 80% in Meru, compared to 33% in Embu and 70% in Tharaka Nithi. The project targeted to reach at least 80% (24) Agri producer groups to have digitized their records. At MTE, the project has made remarkable achievement, and it is 18% below the final target. **Diversity in digital record management:** Digital weighing scale has been used by 41% of the Agri producer groups, while 3% have installed CCTV. Other digital applications include printers, servers for computers and a software to manage data for the irrigation project in Tharaka Nithi. Data management software's owned by the Agri producer groups include Microsoft dynamic operated by 17% of the Agri producer groups, mainly by 50% of Agri producer groups in Meru.

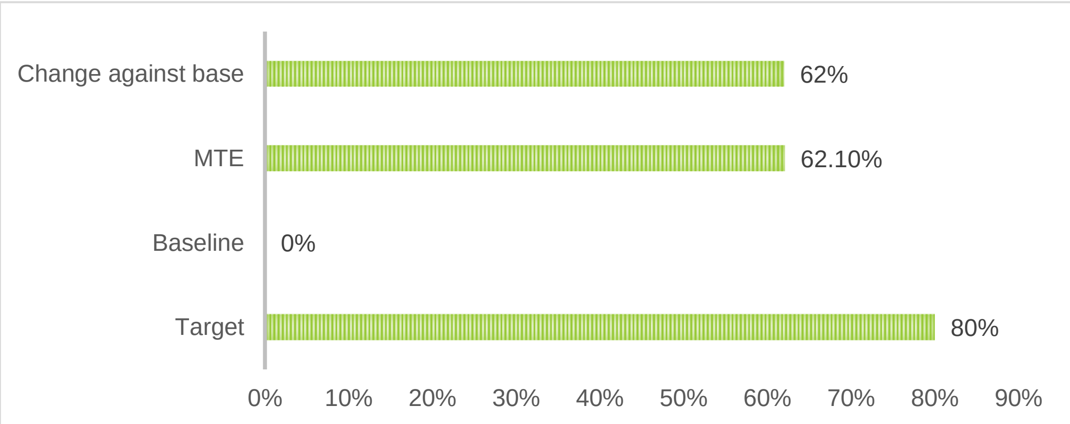

Figure 24: Percentage of cooperatives with digitized records

215. Others include Biartic Dairies solution in Tharaka Nithi, Carl White in Meru, Dairy ERP in Tharaka Nithi, Dairy management software in Tharaka Nithi, Farm Tech management software in Tharaka Nithi, FONSCOM systems in Meru, JISOFT Dairy management

systems in Tharaka Nithi, MINET in Meru, Ms EXCEL in Tharaka Nithi, Opti-Merce Customized software in Embu and Simple Customized software in Embu. The study noted high diversity in data management software in Tharaka Nithi, followed by Meru, then Embu.

Table 18: Percentage of cooperatives with digitized records

Indicator	Target	Baseline	MTE	Change against base
Percentage of cooperatives with digitized records.	80%	0%	62.1%	62%

216. **Investment in data backup:** The study noted that 59% of the Agri producer groups back up their data, with majority, 80% in Meru, 56% in Embu and 40% in Tharaka Nithi. It was noted that only 7% uses cloud-based data backup, especially, 11% in Emby compared to 10% in Meru. 3% uses hard copy such as register, while 35% uses both (Cloud and hard copy backup), with majority, 70% in Meru and 30% in Tharaka Nithi, with more of the FOAB adopting both options in Embu. Hard disk and flash disc being the main data storage device used by 7% of the FOAB, respectively.

217. **Sustainable Energy sources at Agri producer groups:** The study noted that 97% of the Agri producer groups rely on the Kenya power and lighting company (KPLC) as sources of Energy/power, while 55% use generators, with majority in Embu, (89%) followed by Meru (50%) and 30% in Tharaka Nithi. 38% are using thermo solar to run their operations, especially among the Agri producer groups in Embu (44%) and Tharaka Nithi (60%). It seems that solar and generators are used as backup whenever KPLC power goes off, which is confirmed by 97% of the Agri producer groups, who mentioned that KPLC is their main source of power, while only 10% of the Agri producer groups in Tharaka Nithi has solar as the main source of power. Discussion with the Agri producer groups with solar systems indicated that its mainly used to boil water for cleaning the milk chilling tanks. The adoption of clean energy, especially in Embu is low, as majority, 88% of the Agri producer groups still uses generators as backup to the main source of power, which is KPLC.

RESULT 3: Access to structure in-put and out-put market, coordination and networking of agri-food value chain actors improved.

R3. to what extent the project improved the access to market structures incoming and exit, as well as the coordination and networking of the actors in the agrifood value chain.

218. The project was to undertake a detailed dairy value chain analysis and mapping of key stakeholders, establish and hold County dairy stakeholder's forum and semi-annual roundtable meetings, ensure that at least 9 policy recommendations made and implemented, 30 learning / bench marking tours for the producer groups conducted and at

least nine Annual market-linkage workshops and Stakeholders Exhibition Held-At least 30 new business linkages and 6 operational partnerships established.

Table 19: Viable business linkages, value chain actors and polices

Indicator	Target	Baseline	MTE	Change against base
Number of new viable business linkages	30	0	27	27
Number of operational partnerships built.	6	0	6	6
Percentage of new value chain actors increase their network due to the market linkages established.	90%	0%	65%	65%
Number of policies and strategies recommendations, customized or enforced each year.	3	0	0	0
Number of stakeholders participating in the stakeholder's forum.	30	0	26	26

219. **Number of new viable business linkages:** The project targeted to provide an environment through which Agri producers are able to do business with other private companies. At MTE, the Agri producer groups mentioned 27 viable business who they are interacting with. Institutions such as KAGRIC provides siemens while a number of companies working with them do supply inputs such as feeds and animal health.

220. **Number of operational partnerships built:** Stakeholder engagement among relevant partners on project implementation was well executed hence contributing to the success of the project. Operational partnerships have been operationalised through MOUs and contractual agreements. Universities such as EMBU have a working relation with a number of companies to enable students to participate in extension service provision and attachment. The University is also providing training to a number of Agri producer groups. Both Embu and Chuka universities participated in dairy value chain studies which has informed the program interventions especially in relation to stakeholders. Other relationships have been with Kenya Dairy Boards. Partnership with the county government was evidenced through provision of baseline information to enable baseline establishment; mobilization of the community members, groups and cooperatives to participate in the project; provision of training and training contents to the participants, radio outreach in which the department of livestock staff participated in talk shows and outreach programs. KII reported the need to involve also the Department of trade which has potential to facilitate trade among the cooperatives in future.

221. **Number of policies and strategies recommendations, customized or enforced each year:** This activity envisions round table discussions between stakeholders in identification of policy gaps, discussing them and engaging the county and national governments to enact them as acts. These were to unlock the operationalisation and making dairy sector competitive. The stakeholder forums have been established at county level, that brings both the farmers, businesses and government departments to a round table for discussions.

While the project targeted at least 3 polies gaps to be identified, none has been done so far. There is the need to allocate more time and efforts on this, as it has potential to unlock the dairy industry.

222. **Number of stakeholders participating in the stakeholder's forum:** The study noted that the 29 Agri producer groups belong to 26 dairy value chain stakeholder forums, with majority, 14 in Embu, followed by 9 in Meru and 3 in Tharaka Nithi. It was noted that the Agri producer groups have signed 32 business agreements, with majority, 14 in Tharaka Nithi, followed by 13 in Embu and 5 in Meru.

3.3 Efficiency

Criterion	Efficiency
Overall score	Satisfactory

Evaluation question 4: How efficient was the implementation, management and monitoring of the program?

Sub-questions 4.1: *Have human resources and activities been managed in a cost-efficient and transparent manner?*

Project staffing:

223. The project was implemented in collaboration with E4IMPACT, with a total of five field staff dedicated to its execution. Additional support was provided by staff from the MEAL and accounting departments, who contributed based on a fixed time equivalent reflecting their time investment. To optimize the efficiency of project implementation, the project team partnered with county government staff at the local level to provide the necessary extension services, with travel costs being the only cost covered by the project.

224. Given the limited number of full-time staff—only five field staff—and the large geographical spread of 16,450 active members of the Agri Producer Groups across three sparsely distributed counties, managing the project and delivering essential support could have been costly. However, the project effectively leveraged available resources through strategic partnerships. This approach has ensured value for money in the implementation of project activities.

Sub-question 4.3: **To what extend have the project coordination mechanisms ensured full participation of all partners and are functional to the overall management of the project.**

225. **Joint Project planning, monitoring and cross learning:** The project has put up systems for project activity monitoring and planning systems. The project has been planning efficiently, bringing on board the partners in planning and sequencing of activities. Planning meetings are being held on monthly basis, enabling partners to be able to identify challenges and propose solutions, and therefore was an efficient way of encouraging participatory project monitoring.

226. **Project procurement:** The project was planning for activities in advance such as procurement which is done 3 months before. The project has established a procurement committee for evaluation and approval. The project manager raises the need for procurement, which is sent to procurement for solicitation of quotations. The procurement committee meets to select the bidder based on the regulations, of which approvals are based on amounts to ensure transparency and accountability. (1) Single sourcing is for services and products valued below 100K (2) Simplified procedure 100k to 1 million needs 3 quotations after tendering (3) Above 1 million require participation of both Kenya and AVSI HQ.

Sub-question 4.4: **To what extend are the resources adequate to the activities and objectives of the interventions**

227. **Project Benefit cost ratio:** The project strengthened the capacity of the Agri producer groups with the hypothesis that the enhanced capacity will provide incentive to producers to invest in dairy enterprise. This has been successful. Productivity has increased and incomes improved. The total project budget was EURO 1,892,974 for a period of 3 years, with an average expenditure of EURO 630,991 per year. At MTE, the project budget expenditure rate should be at 50% (EURO 946,487), translating to EURO 57.5, per capita (per farmer).

228. **Farm level investments:** The study noted that on average per day, a farmer is producing 13 lits, of which 84% is sold to the market (10.92 lits/day). With the average price of KES 47 per lit, and assuming that the production is across the 365 days in a year, 1 farmer is earning KES 187,332.6 (EURO 1,310) per year, and KES 280,999 (EURO 1,965) in 1.5 years. The expected benefit cost ratio of the action in a PPP model was 33. Meaning that for every EURO invested, farmers are generating EURO 33, in 1.5 years at MTE.

Table 20: Cost benefit ratio at farm level investments

MAZIWA II: Outreach /beneficiaries											
Value chain	**Target Wards in Homabay**	**No. of beneficiaries**	**Implementation partners**				**Estimated milk/day (10.92 Lits/day)**	**Estimated potential impact** *(Per household incremental annual returns in EURO)*	**Target group, beneficiaries - other classifi.**		
			Civil society, Public Sector			**Private sector**			Small holders	Youth	Women (52%)
			AVSI	E4IMPACT	Counties	AGRI Groups	Volume				
Dairy	Embu, Meru and haraka	16,450	☑	☑	☑	☑	**98,439,432**	31,500,618	16,450	15,134	8,554
Total		**16,450**					**98,439,432**	**31,500,618**	**16,450**	**15,134**	**8,554**
- Every household will be involved in the dairy value chains to ensure added /incremental incomes are able to improve their wealth, nutrition and resilience. *- Expected benefit cost ratio of proposed PPP model is 33, which is a recurring annual benefit in the hands of farmers post 1.5 years of interventions.*											

229. Project cost (EURO) for 1.5 years is 946,487; Project returns EURO 31,500,618 for 16,450 participants. The Benefit cost ratio is 33 per farmer.

230. **Agri producer group investments:** Project benefit ratio at Agri-producer level was also determined. With each of the 29 Agri producer groups selling 131,823 lits of milk on average per month, selling at EURO 0.35 per lit to processor.

Table 21: Cost benefit ratio at Agri Producer group level investments

MAZIWA II: Outreach /beneficiaries											
Value chain	Target Wards in Homabay	No. of beneficiaries (Agri producers)	Implementation partners				Estimated milk/Year	Estimated potential impact *(Per household incremental returns in EURO)*	Target group, beneficiaries - other classifi.		
			Civil society, Public Sector			Private sector			CBO	SHG	COOPS
			AVSI	E4IMPACT	Counties	AGRI Groups	Volume (Lits/year)				
Dairy	Embu, Meru and haraka	30	☑	☑	☑	☑	**48,115,395**	16,840,388	3	6	21
Total		**30**					**48,115,395**	**16,840,388**	**3**	**6**	**21**
- Every household will be involved in the dairy value chains to ensure added /incremental incomes are able to improve their wealth, nutrition and resilience. *- Expected benefit cost ratio of proposed PPP model is 18, which is a recurring annual benefit in the hands of farmers post 1.5 years of interventions.*											

231. Project cost (EURO) for 1.5 years is 946,487; Project returns will be EURO 16,840,388 for the 30 Agri producer groups. The Benefit cost ratio is projected to be 18 per Agri producer.

3.4 Sustainability and Impact

Criterion	Sustainability
Overall score	Satisfactory

Evaluation question: How sustainable are the benefits created with the intervention likely to be in the medium to long run?

5. 1 Are structural and institutional benefits likely to be sustainable?

232. **Partnerships:** The project has invested significantly in a functional partnership with the county government, through inclusion in the steering committee meetings, radio talk shows, capacity development and field monitoring visits. The evaluation however noted margins of improvement with the linkages with private sector organizations. The team shall consider the option of having the subsidy provision passed through the private sector in partnership with producer organizations for sustainability. The private sector, apart from ensuring the subsidy reaches the community, they can also provide after sale services such as training, which could have supplemented the project efforts.

233. Furthermore, the project shall consider more efforts in facilitating business 2 business (B2B) meetings through deal rooms and café discussions, linking them with the cooperatives and smallholder farmers. Such linkage meetings will ensure demand and supply are linked. In lieu of the youth engagement, such linkages will build foundation for strong sustainable relationships in access to inputs.

234. **Capacity development:** The project has enhanced the capacity of the cooperatives, CBO and SHG at leadership level, with the premise of building a functional leadership, that could be accountable to its members. While it was assumed that building a strong farmer organization will lead to automatic member loyalty and adoption of technologies at farm level, there has been mixed results. The capacity of the members on governance and accountability is still low, which impedes them from supervising and assessing the leadership.

235. While the radio stations were effective in disseminating trainings to smallholder farmers in the three counties, there is need to identify the correct time to disseminate such training. 7 to 9am appeared inadequate timing for such disseminations. Farmers have suggested late evening or just before the 9pm news as the most appropriate time.
The need for capacity development around milk safety, monitoring and surveillance, silage making and fodder conservations, group governance and accountability in partnership with other stakeholders at household level shall continue and require strategic efforts in the second half of the project implementation period.

236. A combination of subsidy kit provision to farmers together with demonstrations will be important in future, in partnership with the private sector.

237. **Environmental sustainability:** The introduction of fodder materials and capacity building on control of pests and diseases was part of the strategy to reduce diseases spread with the location, making the environment conducive for livestock production. The promotion of energy saving equipment's both at the producer group and household level potential in promoting green energy, conserving the environment. The investment in milk spoilage and spillage reduction had potential to create a clean working environment for both animals and human beings. The potential investments through matching fund and grant to the youth may have negative or positive impact to the environment, both in byproducts and demand for power and water.

238. There is need for an Environmental Impact assessment (EIA) to be undertaken to mitigate against the risks of these investments. Potential risk analysis needs to be in place together with risk mitigation measures before approval of the financing.

239. **Social Inclusion:** The project has put up systems to promote social inclusion at both the producer groups and small holder farmer level. Access to grant by about 300 youth, to participate in the dairy sector, has potential to create jobs and increased youth participation along the dairy value chain. The provision of the fodder seed, molasses and polythene bags for silage making has supported households who were not in fodder production. This has ensured their inclusion and participation along the dairy sector. The matching grant which will be provided to the cooperatives will ensure improved competitiveness, building confidence among the members to continue engaging with the cooperative, increasing membership benefiting from collective action. The chilling facility at the cooperatives will

ensure that women are able to supply evening milk and becoming members of the societies. The capacity building on gender at the farmer organization, and establishment of policies have ensured women participation both as suppliers and taking leadership positions has ensured women are not left behind.

240. The project shall consider putting in place a strong capacity development plan to support the youth grant investment and cooperative matching grant. A clear business plan including business canvas need to be in place, including risk analysis to identify potential risk and mitigation measures.

5.2 Are social benefits likely to be sustainable?

241. The project has put in place a number of sustainability measures which will enable the project participants continue benefiting from the investments post project. We have noted a number of these that needs attention in the next phase of project implementation.

242. **Adoption of fodder establishment, and reservation:** The project has invested in sensitizing the community in fodder production. In some cooperatives, such as Mt Kenya East dairy cooperative, has sensitized their members to allocate an area for fodder production within their farms. Participants have been exposed during trainings and have access to different varieties of fodder, through the cooperatives. There is need to establish a strong distribution channel through partnership with private sector companies or local distributors in fodder seed, linked to the cooperative for supply of quality and agroecologically correct varieties of fodder. The cooperatives have already established a financing model for its members to access inputs through an exchequer system based on milk supplied. This will enable members who don't have ready cash and are active milk suppliers to be able to access fodder seeds.

243. **Fodder as a business case for the youth:** The promotion of the fodder conservation business model through the youth have potential to support community members in fodder production and conservation, creating fulfilling and descent jobs to the youths. Given that the community has been sensitized on fodder production and have seen its importance in productivity improvement, the project has created demand for fodder conservation services, which the youths will be taking over. The provision of a startup kits through the grants was well thought of which will enable the youth to build a sustainable foundation for the business to kick off. For these ventures to be more sustainable, investment in mentorship programs, exposure visits for the youths and training on negotiation skills, advocacy and customer care will be important as part of soft skill development.

244. **Matching grant model targeting the cooperatives:** The matching fund will enable cooperatives to invest in cold chains, for improved milk bulking and delivery of milk to the processors, thereby improving on efficiency and competitiveness. This will reduce milk spillage and spoilage especially at the cooperative level. The 50:50 contribution model will ensure that the cooperative own the investments and manage it as their own. On the other

hand, reduction in spoilage and spillage will improve incomes in future, enabling the cooperative to increase its disposable income for investment in other activities. Members will be motivated to supply more milk as they are sure they are getting paid for liters of milk supplied. There is still need for further training to the management and staff of the dairy cooperatives on milk handling, quality assurance and safety to be compliant to standard requirements.

245. **Good governance has created loyalty at members level:** The project has invested in good governance and creating systems at the cooperative, CBO and SHG as a pull factor to the members. These investments have led to increase in membership, increase in volumes of milk supplied and accountability especially through creating digital systems for product, supplier management and input distribution. Building the capacity of the leaders on good governance and ability to manage these systems has built the member loyalty and they have seen improved accountability and efficiency at the cooperative and thus their future sustainability. New members will continue registering to the cooperative as they see a value add as members of the cooperative, CBO or SHG.

Criterion	Impact
Overall score	Satisfactory

Evaluation question: To what extent the project contributed to the improvement of socio-economic conditions of local communities and to the recovery of levels and standards of production prior to the Covid19 pandemic

4.1 To what extent the family income of small agri-food producers has increased

4.2 To what extent climate smart production has been adopted by the target beneficiaries?

246. **Dignified and fulfilling incomes:** The targeted project participants are currently earning a dignified and fulfilling income, which is based on an individual earning an average of KES 16,500 (EURO 115.4) as defined by the government of Kenya and ILO. As at MTE, the average income per month is EURO 136 which has increased by 19% based on the baseline of EURO 114. A number of concerted efforts have led to this impact. Milk production has increased by 33%, from 7.8 lits/day/cow to 10.4 lits per day/cow. This has been due to increased access to feeds and fodder, farmers have been sensitized in silage production and their animals are able to access feeds even during dry seasons. Furthermore, 66% of the farmers adopted at least two climate resilient practices. These include planting of improved fodder varieties, which are high yielding and drought tolerant.

247. Investing in dairy has led to new income generating opportunities along the dairy value chain. Sale of manure, calf’s and offering training is earning them reasonable income. Increased incomes have led to increased access to food (with 78% eating 3 meals a day),

supported the payment of school fees for their children and pay for health services. The stress levels when paying for services has reduced due to increased disposable incomes.

248. **Partnership:** The project has built a sustainable and functional partnership with the public sector. This is important in future as the extension staff from the livestock and agriculture departments have been trained, their knowledge improved and therefore have capacity to change farmer attitudes. The same staff have participated in radio discussions through which farmers have been able to interact with the staff in real time. KDB representative in Meru indicated that after such interactions, they have received a number of farmers and private companies coming to their offices for more information. The establishment of the county committees and overall project committees which brings key implementing organizations to review the project and monitor progress has enabled coordination and increased efficiency in project implementation. The concerns around the steering committee were around the consistency in attendance by participants, where participating organizations send in different participants at different time, affecting the flow of discussions.

249. **Improved governance at Agri producer groups:** The project has invested significantly at the Agri producer level on improving governance and accountability. These has been delivered through capacity development along governance and financial management. The plans for matching fund will increase the cooperative capacity to absorb more milk, reducing losses due to spillage and spoilage making the cooperative's activities efficient. Investing in digital data management especially in milk collection, payments and membership management are leading to increased accountability. These are leading to trust among the suppliers, building a foundation for loyalty. Immediate impact has been seen in increased number of active farmers supplying milk, by 11%. The average volume of milk being supplied per day has also increased, while the volumes have increased by 37%. Investing at the cooperative and group level has therefore led to a triple impact. The Director of Livestock at Meru County observed that the cooperatives need to move beyond production and engage with other market players in doing business, access to finance and funding, to build a sustainable future.

Household Incomes

IMPACT Indicator: Change in Household dairy income (EURO)
IMPACT Indicator: % of small-scale farmers who reported increased income by at least 30%

250. The study observed that despite the economic and climate shocks that affected the target areas during the implementation period, the household income from dairy has increased by 17%, from an average of EURO 114.8 to EURO 136.33. This is still below the target of EURO 149.24.

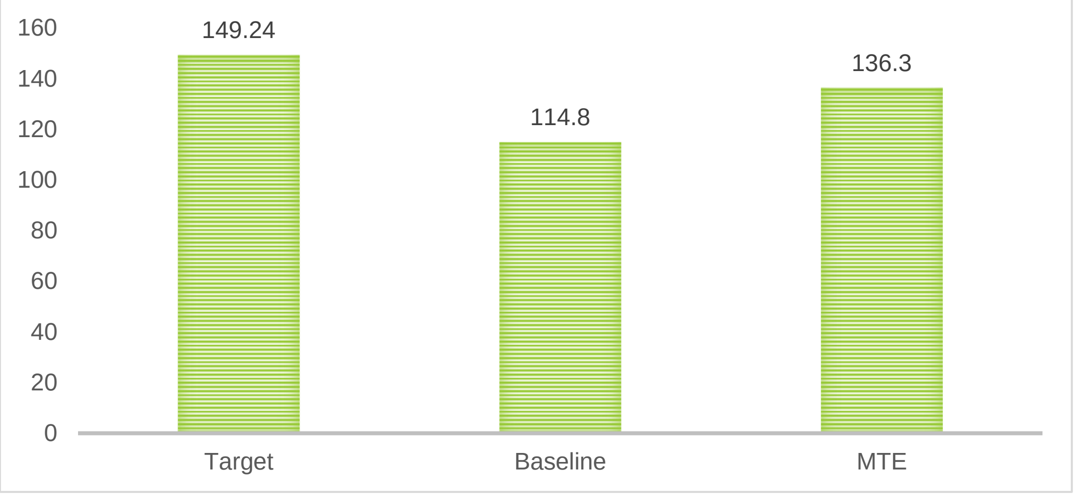

Figure 25: Change in Household dairy income (EURO)

251. The project also targeted that 70% of the smallholder dairy farmers would have improved incomes by 30% by the end of the project. While there was no baseline for this indicator, the MTE evaluation noted that only 20% had achieved a 30% improvement in income.

252. **Diversity in household income:** The mid-term evaluation noted that majority of the households are earning a monthly average income of KES 31,247 (EURO 218.5), with a higher average income of EURO 245.8 being noted in Embu, followed by EURO 217.1 in Tharaka Nithi and EURO 192.7 in Meru. The average income from dairy enterprise at household level was EURO 136.3, with a higher average of EURO 141.8 in Embu, and EURO 139.2 in Meru (Table 22).

Table 22: Change in Household dairy income (EURO)

Indicator	Target	Baseline	MTE	Change
IMPACT Indicator 1: Change in Household dairy income (EURO)	149.24	114.8	136.3	19%
IMPACT Indicator 2: % of small-scale farmers who reported increased income by at least 30% (%)	70%	0%	20%	20%

253. On income generated from other dairy related farming, the study noted that households generate EURO 82.0, with a higher average of EURO 104 in Embu, compared to EURO 89 in Tharaka Nithi and EURO 53 in Meru. General, the study shows that dairy is the main source of income, contributing 62% of the total household incomes. The study also noted that 20% of the producers had reported EURO 149.24, which was a 30% increase from the baseline. Higher proportion was reported in Meru.

We are now getting better incomes as result of an increase in milk production which has enabled us to take our children to school, created wealth and improved our homes
FGD. Meru County.

Table 23: Household incomes representing the Meru, Tharaka Nithi and Embu Counties

County	#	Income from the Other (EURO)	Total Monthly income (Dairy) (EURO)	Income from Dairy (Dairy) (EURO)	% HH[y]
Embu	197	104	245.8	141.8	19.8
Meru	202	53	192.7	139.2	23.3
Tharaka Nithi	184	89	217.1	127.9	17.9
Average	**583**	**82**	**218.5**	**136.3**	**20.4**

[y]% HH worth EURO 149.24 on Dairy and above.

254. **Sources of household income:** The study noted that farming is the main source of income among the targeted households, as mentioned by 88% of the respondents, with majority, 92% in Meru, and 86% in Embu, compared to 85% in Tharaka Nithi. Other source of incomes includes self-employment, among 8%, compared to 4% who rely on employment. The study observed that among the 4% employed, 75% of them are permanently employed, while 17% are on contract engagement, and only 8% are casuals. Majority, 100% who are on permanent engagements are in Embu, while those on contract, 33% are in Tharaka Nithi. Casuals, represented by 33% were only found in Meru County.

255. **Dairy related enterprises:** The study noted that apart from milk production, 44% of the households are generating income from other sources that are related to dairy farming, with majority of them, 50% in Embu, while 42% were in Meru and 40% were in Tharaka Nithi. Further analysis indicated that 30% have sold heifers, with majority, 37% in Embu, while 23% in Meru and 31% in Tharaka Nithi. 23% sale manure, with majority, 27% in Embu, 25% in Meru and 18% in Tharaka Nithi. Those getting income from training their neighbors on dairy farming and selling bulls and male cales make less than 5%.

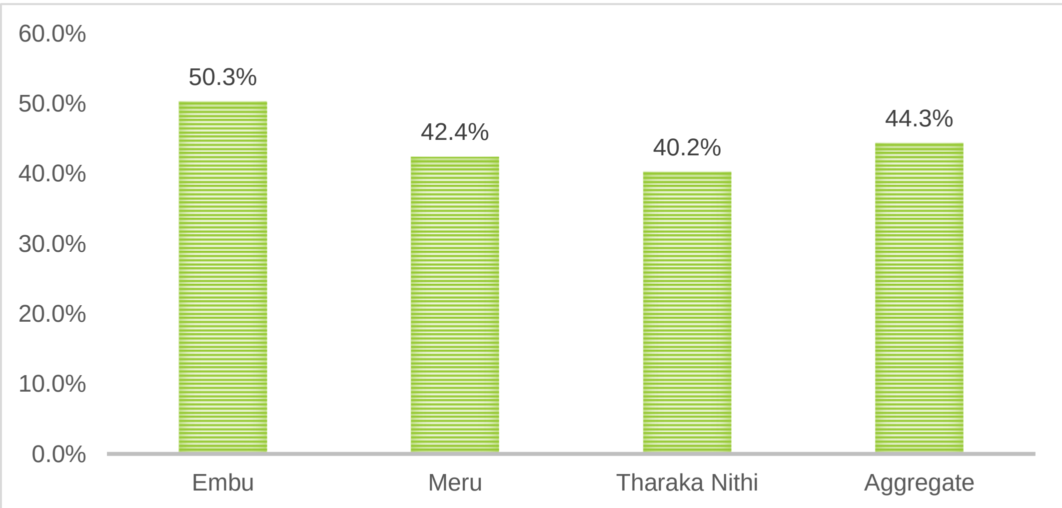

Figure 26: Proportion of respondents having other sources of income related to dairy farming

Diversity in food types consumed by the households in the three counties

Household food security: Access and diversity

256. The study noted that 82% of the respondents have sourced the food they are consuming within their households, in the past one month from (home grown and those bought from the market), with majority, 86% from Embu, compared to 82% in Tharaka Nithi and 8% from Meru.

257. Generally, 78% of the respondents eat at least 3 or more meals per day, with majority, 83% in Tharaka Nithi, compared to 78% in Meru and 75% in Embu. Only 20% eat 2 meals per day, while less than 2% skips some days without meals. Based on a 24-hour recall, to assess household dietary diversity, the study noted that 96% of the respondents are consuming energy foods such as Potatoes, bananas, oils, ugali, millet, rice, maize, bread and cassava, while 61% are consuming Proteins foods such as beans, meat, soya, peas, milk, eggs, chicken and fish. 53% are consuming fruits and vegetables such as tomatoes, oranges, pawpaw, mangoes, pineapples, and vegetables.

258. Focused group discussions with farmers in Meru, indicated that most households don't see green vegetables as food for human being. There is a need for social behavioral change and communication, coupled with food preparation demonstrations. Maize and potatoes are staple food in the 3 counties which is consumed by majority of the households.

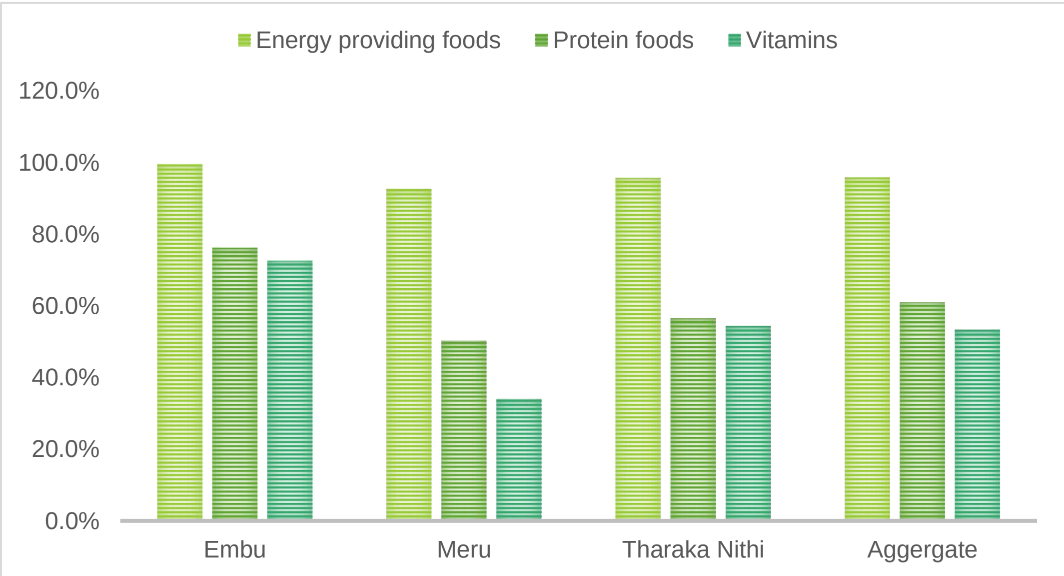

Figure 27: Diversity in food types consumed by the households in the three counties

259. **Difficulty in managing expenditures:** The study noted that households incur a number of expenditures to help them manage health, education among other essential services. Household experiencing low incomes faces difficulty in paying for a number of services. In

particular, paying for education and other related school expenses was difficult to 41% of the respondents, with majority, 53% in Meru, compared to 38% in Tharaka Nithi and 32% in Embu. Paying for health and other related expenses was the second most difficult area, as reported by 34%, with majority, 36% in Meru, compared to 33% in Embu and 36% in Tharaka Nithi. 28% of the respondents faced difficulty in paying for food and other related expenses, with majority, 26% in Embu, compared to 12% in Tharaka Nithi, and 8% in Meru. The study noted that in Meru, fewer respondents are facing difficulty in paying for food and related expenses, due to more and diverse foods being produced in Meru, compared to other locations. Ability to pay for other services such as health and education is faced by more respondents in Meru compared to other locations. Focused group discussions indicated that in Meru, the cost of education is high due to high number of academies requesting for higher school fees.

4. Conclusions

260. **Relevance:** The needs of the targeted beneficiaries have been properly assessed through numerous studies conducted in the inception period and the findings were included in the intervention strategy. The dimension of gender sensitivity was well integrated in the project. The study noted that project design and the theory of change are clear and fully described in the project document and based on a clear logical framework that shows good vertical consistency. Further, the consultative and participatory method chosen to engage local communities and line ministries contributed to ensure alignment with the relevant sector policies. The project included built-in mechanisms for knowledge sharing to disseminate and build upon lessons learned and good practices.

261. National, county and global development vision: The project has contributed towards the achievement of the national government agriculture agenda and the respective County Integrated Development Plan (CIDP). The project is also fully in line with the AICS priorities. The initiative complements the efforts of the national government in fighting increasing vulnerabilities of communities and over-exploitation of natural resources, as envisioned in the Agricultural sector transformation and growth strategy (ASTGS, 2019)'s anchor 3, which aims at boosting household food resilience. The project interventions have been aligned to SDGs 4 out of the 17 goals (2, 4, 13 and 12).

262. **Efficiency:** The project has adopted a clear and detailed procurement plan that enhanced value for money. Despite the drought and flooding crisis, the delivery of results is considered satisfactory: most project activities are ongoing with the project being on track to achieving most project objectives while some activities need to be fast-forwarded. Functioning mechanisms are in place in terms of budget allocation and monitoring along the budget lines to ensure good performance regarding output delivery, cost control and overhead.

263. The project had put in place monitoring and evaluation systems for data collection from the farm to the project offices. Though the project didn't have a monitoring and evaluation staff, the country level staff was contributing party of her time to the project, working together with the field staff. The project established a steering committee at the county level to facilitate joint Project planning, monitoring and cross learning. Through partners meeting, the project was able to get reviews, monitor progress and plan for the next quarter. At partner level, the implementing partners, E4IMPACT and AVSI, met frequently to monitor progress. Planning meetings are being held on monthly basis, enabling partners to be able to identify challenges and propose solutions, and therefore was an efficient way of encouraging participatory project monitoring.

264. Farm level investments: The study noted that on average per day, a farmer is producing 13 lits, of which 84% is sold to the market (10.92 lits/day). The expected benefit-cost ratio of the action in a PPP model was 33. Meaning that for every EURO invested, farmers are generating EURO 33, in 1.5 years at MTE Agri producer group investments: With each of the 29 Agri producer groups selling 131,823 lits of milk on average per month, selling at EURO 0.35 per lit to the processor. The Benefit-cost ratio is projected to be 18 per agri-producer.

265. **Effectiveness:** The project has successfully completed all preliminary actions during first term of implementation (Staff recruitment, MOUs, Launch, baselines). Dairy Producer Leaders received training on Governance and Management skills. Positive trend recorded in milk production as well as revenues from the sales but not yet reached the project target. Farmers received the subsidized recovery kits (6-kgs silage maize seed, silage polythene sheet and molasses) for fodder establishment and preservation. Local radio session conducted through two Local Radio Stations for awareness and capacity building. Despite this, more sessions are needed with different timing and more technical assistance and extension services are needed. Youth and women trained on development of appropriate business model to establish Agri input/businesses Enterprises Done.

266. The project hypothesis was that by intervening at the cooperative level, the impact will be felt at the farm level. This hypothesis has been proven right. By building the capacity of the cooperatives on governance, financial management and accountability, members of the community have become confident, and are joining the groups. The matching fund which was to unlock the processing, and improved efficiency has not happened yet. The MTE shows relevant increase in membership, and in fact one of the cooperative, Mt Kenya was awarded a trophy by the county government for leading in farmer mobilisation. Milk volumes have increased, as a result of increased accountability. Investment in digital systems has enabled real time feedback on amount of milk delivered and the prices. Day to day operations management system for 30 selected cooperatives improved through ICT skills and tools for proper digitalized record.

267. Private sector partnerships show potential for improvement, particularly in areas such as access to agricultural inputs and animal health services. These areas require further attention and emphasis to fully realize their potential. In contrast, public sector partnerships have demonstrated notable successes and positive outcomes.

268. Regarding policy-related initiatives, progress has been slower, and the implementation has not yet fully commenced. Based on these results, the MTE assesses the overall implementation of this component at 50%.

269. **Sustainability:** The collaboration with relevant local ministries and local authorities is geared toward ensuring the long-term institutional sustainability and ownership of the instruments created. Community empowerment and tools developed and adopted by the project to ensure the transfer of skills to beneficiaries are considered an added value in terms of social sustainability. The design of value-adding infrastructures, climate smart equipment and inputs are aimed at ensuring the sustainability and a cost-recovery system Farmers have been empowered with climate smart solutions and capacity building which make environmental sustainability likely attainable. The need for fodder is increasing and producers are seeing the importance of fodder production and conservation. The project has invested in sensitizing the community in fodder production, through trainings and linkage to private sector companies for high quality, adapted varieties. The cooperatives have already established a financing model for its members to access inputs through an exchequer system based on milk supplied. This will enable members who don’t have ready cash and are active milk suppliers to be able to access fodder seeds.

270. The promotion of the fodder conservation business model through the youth have potential to support community members in fodder production and conservation, creating fulfilling and descent jobs to the youths. The project has created demand for fodder conservation services, which the youths are taking over. The youth could take a central stage as key actors along the dairy sector.

271. **Impact:** The project is contributing to the enhancement of the socio-economic status of local communities and the restoration of production levels and standards during the COVID-19 pandemic. It has begun to demonstrate a significant positive impact on the target communities, particularly in terms of income, nutrition, and attitudinal shifts. The agricultural producer cooperatives in Meru, Tharaka Nithi, and Embu Counties have improved their services, as well as their leadership, management, and accountability. This advancement is the result of successful training implementation and input distribution during the initial phase of the project.

272. The project has invested in good governance and creating systems at the cooperative, CBO and SHG as a pull factor to the members, in long run. These investments have led to increased farmer loyalty and therefore increased membership, milk volumes and therefore the long-term sustainability of the cooperatives.

Furthermore, the project has effectively managed political, technical, social, and partnership risks, establishing mechanisms to adapt to the evolving environment. This has facilitated enhanced coordination and networking among actors in the agri-food value chain.

5. Recommendations

273. **Result based financing model for safety nets subsidy program:** The evaluation recommends that AVSI and its partner consider adopting a Result-Based Financing (RBF) model for the safety nets subsidy program in the future. Under this model, the steering committee would engage the private sector to handle the sale and distribution of products through the cooperatives. The KES 2,000 currently paid by farmers would be directed to the private sector, while the difference in cost could be covered directly by the project. E-voucher modality could also be considered. The private sector would then be responsible for providing after-sales services through its field teams, which may include product demonstrations and training for recipients. This approach is expected to enhance the sustainability of the program moving forward.

274. **Target on the Proportion of Farmers Reporting Increased Productivity:** The target set by the project to achieve a 70% increase in the proportion of farmers reporting increased milk production appears optimistic, particularly when considering the frequent climate shocks and inflationary pressures affecting the region. Climate variability, including droughts and floods, has a significant impact on agricultural productivity, including milk production. These shocks not only disrupt the availability of fodder but also strain farmers' financial resources, making it more challenging for them to invest in productivity-enhancing practices. Furthermore, inflation has led to rising costs of inputs such as feed, equipment, and veterinary services, which further limits the ability of farmers to increase their output. Given these challenges, it may be necessary to adjust the target or implement more targeted strategies that help farmers build resilience to these external shocks.

275. **Milk price fluctuation** poses a significant challenge for 45% of the producer groups, with 38% highlighting marketing as a key issue. The instability in milk prices, particularly in Embu, may stem from market volatility and the lack of a strong, coordinated system for price stabilization. In Embu, where market forces are more unpredictable, producers often face difficulty in securing fair and consistent prices for their milk, which undermines their financial stability. To address this, there is a pressing need to strengthen the cooperative union, which could enhance the collective bargaining power of milk producers. By reinforcing the union's capacity to negotiate better prices with processors and other stakeholders, producers would have more leverage in price-setting. Furthermore, fostering business agreements and long-term contracts between producers and processors could stabilize milk prices, providing a more predictable and sustainable income for farmers. These agreements would not only improve the economic viability of dairy farming but also help producers plan and invest more effectively in their businesses, reducing the impact of price fluctuations on their livelihoods.

276. **Dairy goat interventions:** The MTE evaluation suggests that the current dairy goat interventions should be reassessed, as there are no producer group that are dealing with goats as value chain and there have been no impactful direct interventions specifically targeting dairy goats. Although dairy goats have the potential to be a valuable asset in smallholder farming, especially for households with limited land or resources, the project has not sufficiently integrated these animals into its strategies. In future programming, particularly in regions where goats are a primary source of dairy production, targeted interventions could be developed to support goat farmers. This could include providing access to improved breeds, fodder, veterinary services, and training on effective management practices. Tailored support for dairy goat farmers would increase their productivity and income generation, complementing the broader project goals of improving the livelihoods of smallholder farmers.

277. **Radio talk shows:** The project's radio talk shows have been a useful tool for outreach and education, but there is room for improvement in terms of both content delivery and timing. The MTE evaluation recommends the implementation of a sensitization plan through local farmer groups to ensure that the project members are well-informed about the scheduled radio transmissions. Many farmers have expressed the need for more effective communication of when these programs are aired, as timely awareness is essential for ensuring active participation. Additionally, the timing of the broadcasts should be reconsidered. Currently, the radio talk shows are scheduled at 8 pm, but many farmers have suggested shifting the broadcast to 9 pm. This adjustment would align better with farmers' daily routines, as the later time may be more convenient after the day's work is completed. A more consistent and well-communicated scheduling strategy, along with engagement through farmer groups, would likely increase participation and impact, ensuring that the educational content reaches a wider audience effectively.

278. **Catalyzing Matching and Youth Grants to Unlock Other Activities and Impact:** The implementation of the matching and youth grant initiatives is crucial for unlocking several planned interventions that will drive sustainable change in the target communities. These grants are essential for the adoption of climate-smart agricultural practices, reducing milk losses, and increasing milk collection, which are key objectives of the project.

Similarly, the youth grants will play a pivotal role in empowering young people to establish businesses that can drive economic growth and contribute to the broader goals of the project. These combined investments are anticipated to yield significant and far-reaching impact, and the recommendation is to expedite them during the second phase of the project's implementation.

279. **Establishment of a Service Provider Network at the Community Level:** The project's focus on targeting youth, organized into groups of 10, to identify and implement business models is a strategic approach to fostering entrepreneurship and addressing the local economic needs. Through the grants provided to successful youth groups, these groups will be empowered to purchase startup kits and establish businesses that contribute to the local economy, particularly in the dairy value chain. However, to maximize the potential of these

youth-led businesses, it is essential that they are registered as formal business units rather than as Self-Help Groups (SHGs). This is because SHGs are often limited in scope, and their activities are typically confined to community development, without the ability to scale or expand into broader markets. By formalizing these youth groups into registered business entities, they will be able to access greater financial resources, scale their operations, and engage in more extensive business activities, such as accessing loans, partnering with larger enterprises, and engaging in advocacy efforts. This formalization will significantly increase the scope of their impact, enabling them to contribute more effectively to the economy.

280. **Women participation:** The MTE noted that men still play a significant role at group (though women in leadership is within the constitutional mandate of 1/3) and household level. In Meru, women are not free to mention that they are taking lead in certain aspects at home, especially where assets are being purchased, due to cultural norms and traditions. This may take time to break, especially within the time remaining. This requires continuous sensitization of the community members. A gender specialist may be brought on board to look into issues around these norms and identify how they can be addressed.

281. **Targeted and purposeful private sector targeting:** The project needs to put emphasis on private sector partnerships, especially to leverage on matching and youth funds. Facilitating and B2B (Business to business) of Deal rooms where the private, the public and groups are brought together as part of linkages will be great.

282. **Systematise, promote and scale up best practices:** The MTE team recommends scaling up the best practices identified in the provision of financial services by the Mt. Kenya Dairy Cooperative in Timau. The cooperative's model, which offers financial support to its members through partnerships with financial service providers and acts as a guarantor, should be promoted and replicated. This approach enables cooperative members to access critical capital, thereby facilitating investment in their dairy businesses.

283. Furthermore, the project shall consider systematizing and expand the successful approach implemented within the Meru Dairy Cooperatives, where effective systems for extension services, breed improvement, animal health, and enhanced access to fodder have been established. These initiatives have significantly strengthened the capacity of farmers, leading to increased productivity levels.

284. **The policy component** under Output 3 should be expedited during the second half of the project implementation to achieve the intended results. Given that farmer groups are operating within a weak policy framework, while the Cooperative Act (2013) already addresses most key issues at the county level, the evaluation team recommends focusing on policy development at the *producer group level* rather than at the county level. Specifically, attention should be given to policies related to procurement, human resources, quality control, financial management, ICT, and membership. This approach, centered on the producer group level, is considered more practical and achievable, as it avoids the lengthy processes involved in navigating county assemblies. Additionally, it can be validated through a stakeholder forum, ensuring broader consensus and effective implementation.

285. **Project duration and no cost extension:** Considering the delays encountered in the project's startup phase, including the postponement from September 2022 to April 2023, as well as the subsequent delays in the approval of the procurement plan, the evaluation team recommends the consideration of a no-cost extension for a period of six months. This extension would allow for the completion of planned activities, facilitate the achievement of the project's intended outcomes, and ensure that the project's objectives are fully realized, without incurring additional financial costs.

Annexes

Annex 1: Evaluation matrix

Annex 2 - ENV
Evaluation Matrix av

Annex 2: Evaluation tools

ENV FGD AND KII
v3.docx

Annex 3: Progress Project Result framework

Main Indicator	Minor Indicator	Target	Baseline	MTE	Male	Female
IMPACT: Contribution to the improvement of the socio-economic status of the Local communities, and recovery of levels and standards of production in times of COVID-19.	Change in Household dairy income (EURO)	149.24	114.8	136.3	143.4	130.1
	% of small-scale farmers who reported increased income by at least 30%	70%	0%	20%	24.10%	16.10%
Number of HHs or productive units with access to climate-smart innovative options promoted by the action (e.g., energy-saving technologies, etc.), and type of option	% of farmers have adopted at least 2 sustainable agriculture practices	70%	21%	66%	67.89%	64.90%
OUTCOME: Enhancement of the Agri-producer cooperatives in Tharaka Nithi, Embu and Meru Counties.	Number of new jobs created along the value chain	500	709		N/a	N/a
	Average income per month	6,120,000	3,600,000	5,837,810	N/a	N/a
	% Average increases their income by at least 25%.	25%	0%	62.20%	N/a	N/a
	Percentage of enterprises (cooperatives) having increased income more than 25% by the end of the project	70%	0	43%	N/a	N/a
	Percentage of reduction in post-production losses (Farmer level) Reduced by 50% - Current loss	50%	13%	46%	47.47%	45.50%
	Percentage of reduction in post-production losses (Cooperative level). Reduced by 50% - Current loss	50%	1%	0.6% (30%)	N/a	N/a
RESULT 1: Production and income levels of small holder farmers rebuilt and restored.	Percentage of livestock productivity (e.g., milk yield per head), disaggregated by type of produce	70%	0%	33%	9%	59%
	Livestock productivity (e.g., milk yield per head), disaggregated by type of produce (Lits/Cow/Day)	12	7.8	10.4	8.5	12.44
	Percentage of goat productivity (e.g., milk yield per head), disaggregated by type of produce (%)	100%	0%	5.70%	0	0
	Goat productivity (e.g., milk yield per head), disaggregated by type of produce (Lits/Goat/Day)	3	1.4	1.48	1.82	1.07
	Number of new businesses registered	30	0	30	N/a	N/a
	Percentage of small-scale farmers practicing sustainable agriculture (e.g., conservation agriculture, Climate Smart Agriculture)	60%	21%	66%	67.9%	64.9%
RESULT 2: Agri-Producers Cooperatives leadership, management, accountability, storage and processing capacity reinforced.	Percentage of cooperatives with women and/or youth in leadership position.	75%	6%	29.60%	70.40%	29.60%
	% of cooperatives having business models.	60%	17%	20%	N/a	N/a
	Percentage of cooperatives implementing their business models.	60%	13%	34%	N/a	N/a
	Percentage of cooperatives with digitized records.	80%	0%	62.10%	N/a	N/a
	Percentage of increase of milk processed at the cooperative level	30%	30%	37%	N/a	N/a
RESULT 3: Access to structure in-put and out-put market, coordination and networking of agri-food value chain actors improved.	Number of new viable business linkages	30	0	26	N/a	N/a
	Number of operational partnerships built.	6	0	6	N/a	N/a
	Percentage of new value chain actors increase their network due to the market linkages established.	90%	0%	65%	N/a	N/a
	Number of policies and strategies recommendations, customized or enforced each year.	3	0	0	N/a	N/a
	Number of stakeholders participating in the stakeholder's forum.	30	0	26	N/a	N/a