

Making Kenya's Dairy Farming Inclusive and Profitable: Socioeconomic Empowerment of Farmer Categories and Investors - A Narrative Review of Evidence from 2018-2026

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Abstract: Inclusive and profitable dairy development requires more than participation in production, training, technology adoption, or producer organisations. It also requires equitable access to productive assets, control over income, participation in decision-making, access to markets and services, employment, leadership, and resilience. This narrative review synthesises evidence published between 2018 and 2026 on the socioeconomic inclusion and empowerment of women, youth, persons with disabilities, and dairy investors in Kenya. The review draws primarily on Kenya-specific dairy research and complements it with relevant evidence from broader agricultural, youth agripreneurship, disability, climate, digitalisation, policy, and investment literature. The evidence shows that women make substantial contributions to dairy production but may have less control over livestock, milk income, productive assets, and commercial decisions. Dairy intensification and climate-related pressures can also increase labour and time demands, particularly where unpaid care and farm work remain gendered. Youth participation is constrained by limited access to land, finance, skills, mentorship, technology, productive assets, and reliable markets, although opportunities exist in dairy farming and in commercially oriented enterprises such as fodder production, mechanisation, animal-health services, milk collection, digital services, and value addition. Producer organisations can improve access to resources and strengthen women's empowerment, but membership and governance arrangements may create exclusion. Disability inclusion remains substantially under-researched in Kenya's dairy sector, with limited evidence on accessibility, reasonable accommodation, enterprise participation, and economic outcomes. The review also finds that dairy investment is expanding across production, processing, aggregation, cold-chain infrastructure, feeds, genetics, services, and value addition, but investors face challenges related to production costs, milk quality and consistency, aggregation, cold-chain infrastructure, finance, compliance, and market risk. Overall, the review argues for a shift from participation-based measures to outcome-oriented indicators of asset ownership and control, income control, decision-making, labour, market participation, leadership, employment, profitability, and resilience. Given the heterogeneous evidence base and inclusion of contextual studies beyond Kenya and dairy, the findings should be interpreted as a narrative synthesis rather than as estimates of prevalence or causal effects.

Keywords: Dairy farming; Socioeconomic empowerment; Women; Youth; Persons with disabilities; Dairy investors; Inclusive development; Cooperatives; Kenya.

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Introduction

Dairy farming contributes to rural livelihoods and provides opportunities for household income, employment, nutrition, and enterprise development in Kenya. Yet participation in dairy production does not necessarily translate into equal access to resources or equal control over the benefits generated. Gender, age, household position, location, financial circumstances, and disability can shape who owns livestock and equipment, performs daily work, accesses extension and finance, participates in producer organisations, negotiates with buyers, and controls the proceeds from milk sales.

Research on Kenyan dairy households has shown that gendered divisions of labour and differences in how women and

men report household decisions complicate the measurement of participation and empowerment (Tavenner et al., 2018). Studies of commercialisation have also described how cattle and formal milk markets can be associated with masculine social meanings and with men's stronger claims over dairy income, even where women contribute substantial labour (Tavenner & Crane, 2018). Thus, increased productivity or formal market participation should not automatically be treated as evidence of equitable development.

Youth face a different but overlapping set of constraints, particularly where access to land, livestock, finance, networks, and market opportunities depends on household resources or established relationships. Research on Kenyan agripreneurship

identifies barriers that include inadequate capital, skills, information, mentorship, infrastructure, and market connections (Ouko et al., 2022; Rogito et al., 2020). For persons with disabilities, the available dairy evidence is much thinner. The absence of disability-disaggregated evidence should be understood as an information gap, not as proof that barriers do not exist.

This article synthesises evidence on women, youth, and persons with disabilities in Kenya's dairy sector. It separates the key findings from the detailed literature review, identifies gaps in the available evidence, and discusses implications for inclusive dairy programmes, producer organisations, and policy.

Review approach

This article uses a narrative literature review approach. The source document supplied for this review covered research and policy materials published between 2018 and 2026. The synthesis retains its principal themes - women's assets and decision-making, time poverty and climate stress, youth economic pathways, cooperatives and digital inclusion, and disability inclusion - and incorporates bibliographic details and selected findings verified against publisher, research-institution, and government records.

Priority was given to publications addressing Kenyan dairy systems directly. Relevant wider agricultural studies and policy

documents were included where they helped contextualise youth agripreneurship or disability inclusion. These sources are identified as contextual evidence rather than treated as direct measurements of Kenya's dairy sector. The review is narrative rather than systematic: it does not claim exhaustive database coverage, a reproducible screening process, or a pooled estimate of effects. Findings from individual studies are therefore reported with attention to their setting and scope.

Literature Review

Dairy producing areas in Kenya and cattle population

Key dairy-producing areas in Kenya are: Nakuru, Nyandarua, Uasin Gishu, Bomet, Murang'a, Kericho, Kiambu, Elgeyo-Marakwet, Meru and Trans Nzoia. These areas are the leading dairy-cattle counties. In 2024, the largest dairy cattle populations were reported in Nakuru (472,449), Nyandarua (404,400), Uasin Gishu (356,708), Bomet (334,895), Murang'a (332,354), Kericho (287,316) and Kiambu (278,637). For milk production, 2024 data identify Meru, Uasin Gishu, Kiambu, Nyandarua, Nakuru, Murang'a, Kericho, Trans Nzoia and Nandi among the major producing counties as presented in the figure below: (KNBS National Agriculture Production Report 2025).

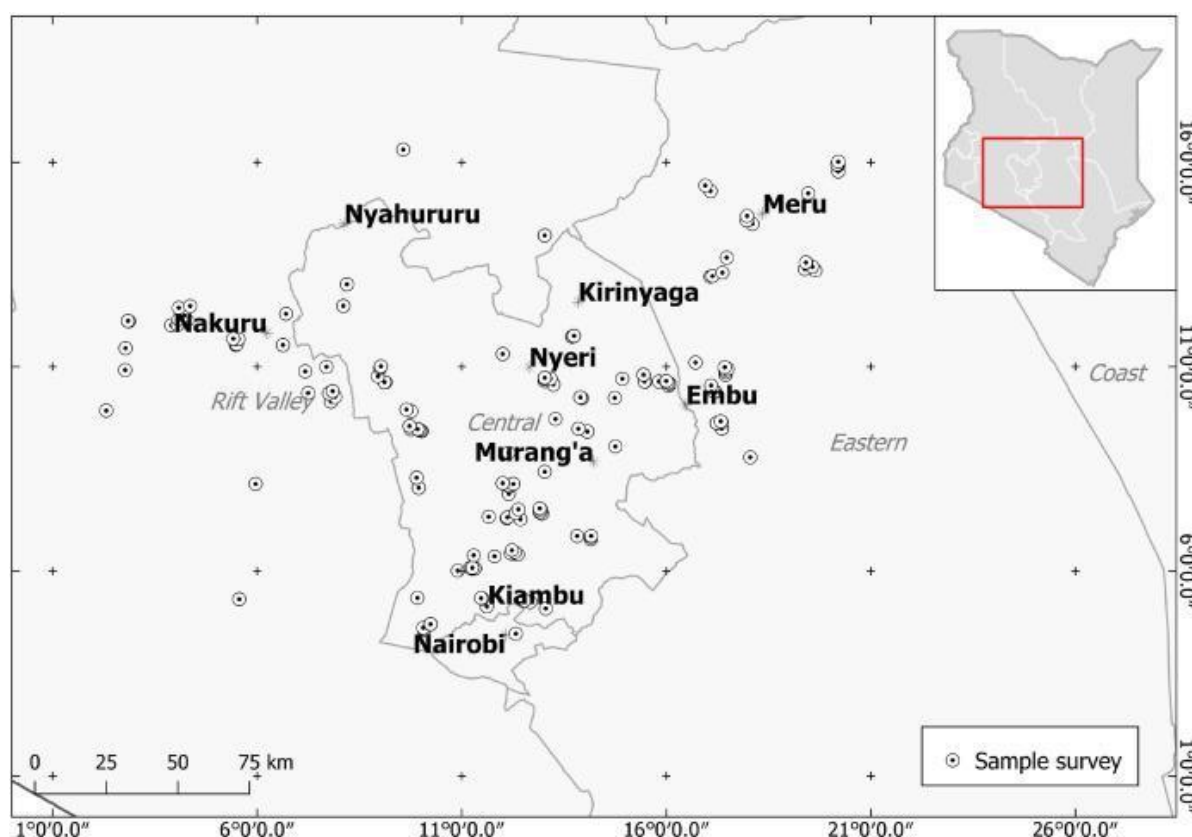


Figure 1: Dairy producing areas in Kenya. Source: KNBS National Agriculture Production Report 2025

Gender, commercialisation, and control of dairy resources

Tavanner and Crane (2018) examine gender power in Kenyan dairy and show how cattle, milk, and commercial enterprise are shaped by gendered norms. Their analysis cautions that increasing women's formal participation in milk markets does not necessarily redistribute authority over dairy proceeds. Tavanner et al. (2018) similarly demonstrate that women's and men's reports of household decision-making and resource control can differ.

Such differences have methodological implications: relying on one household respondent can obscure contested decision-making and the distribution of work and benefits.

Research on women milk marketers in Kenya further considers the trade-offs that can arise as dairy systems intensify and formal markets expand (Tavanner, 2021). Informal milk marketing may provide women with income or some control over proceeds, while also exposing them to constraints linked to

regulation, social norms, and unequal market power. The implications are not that formalisation is inherently harmful, but that interventions should examine who gains access to new markets, who bears compliance costs, and who controls the resulting income.

The role of producer organisations is similarly conditional. Using data from Kenyan dairy smallholders, [Mwambi et al. \(2021\)](#) assessed women's empowerment across production, nutrition, resources, income, opportunities, and workload. They found positive associations between producer-organisation membership and several empowerment domains, with stronger benefits where women were themselves members. The functional characteristics of organisations also mattered. These results suggest that membership counts alone are insufficient: rules governing registration, voting, services, leadership, payments, and asset ownership should also be assessed.

Research on improved planted forages in Kenyan smallholder dairy systems also identifies gender dynamics and social implications that need to be considered when promoting feed technologies ([Lukuyu et al., 2021](#)). Forage interventions may influence labour allocation, access to land and planting materials, and decisions about feed production and use. Gender-responsive design should therefore assess who supplies labour, who controls the forage plot and its output, and whether new practices increase or reduce workloads.

Youth participation and agripreneurship

Youth engagement in dairy is shaped by the relationship between household assets and opportunities to enter the sector as independent producers or service providers. The Kenya Youth Agribusiness Strategy 2018-2022 identified finance, land, markets, skills, and technology as areas requiring attention in youth participation in agriculture ([Ministry of Agriculture, Livestock and Fisheries, & Council of Governors, 2018](#)). Although the strategy period has ended, its themes remain relevant as a historical policy framework and should not be mistaken for a current strategy.

[Rogito et al. \(2020\)](#), studying 240 respondents in Kakamega County, reported low youth involvement across agricultural value-chain activities and a strong relationship between access to financial services and youth involvement. [Ouko et al. \(2022\)](#), in a review of Kenyan youth agripreneurship, identified constraints including limited land and finance, inadequate skills and information, weak networks and mentorship, poor market information, climate risks, and limited value addition. These studies concern agriculture broadly and should not be presented as dairy-only findings.

More directly, [Okello \(2025\)](#) studied 384 youth dairy agripreneurs in Nakuru County using a choice experiment to examine preferences and willingness to pay for climate-smart dairy technologies. Preferences differed by technology attribute, with concentrate feeding and contingent livestock planning among the options valued by respondents. The findings show the value of understanding young entrepreneurs' demand, affordability, and business calculations before designing technology packages. Youth participation can include dairy farming itself as well as fodder production and sales, mechanisation, feed services, animal-health support, digital advisory, milk collection, cooling, and value addition. Each pathway requires market validation and a workable business model.

The broader lesson is that training should be connected to productive resources, finance, mentorship, customers, and routes to revenue. Programmes should distinguish between youth who wish to manage farms, those seeking wage employment, and those who may establish service or input businesses. Outcomes should be measured through enterprise survival, paid work, repeat customers, profitability, and control over earnings, rather than training attendance alone.

Climate stress, unpaid work, and technology design

Climate stress can affect inclusion through unequal demands on time and resources. [Cheboi et al. \(2025\)](#) report that young women in an integrated crop-dairy-goat farming study had substantial responsibilities for feeding, cleaning, and watering animals, with water-fetching burdens increasing under climate stress. The setting differs from specialised dairy-cattle systems, so the findings should be interpreted as relevant contextual evidence rather than a national estimate.

[Maina et al. \(2026\)](#) provide more direct evidence from Kenyan smallholder dairy systems, reporting that herd-health management practices were associated with increased labour demand for both women and men and negative associations with selected dimensions of women's empowerment. These findings underline the need to assess the time, cost, and control implications of innovations alongside productivity outcomes. Labour-saving equipment, reliable water access, accessible fodder services, flexible extension schedules, and household discussions on task allocation may help address constraints, but their effectiveness should be evaluated in specific settings.

Cooperatives, digital access, and institutional design

Cooperatives can provide access to input supply, extension, collective marketing, finance, and bargaining power. However, institutional rules can also create entry barriers. The Kenya Dairy Industry Sustainability Roadmap 2023-2033 identifies land-ownership requirements as a potential obstacle for women and youth and discusses household membership, women's and youth councils, mentorship, and governance changes as possible responses ([KDB, 2023](#)). Whether these measures improve inclusion depends on their implementation and on whether members gain meaningful voice and access to services.

Digitalisation may create opportunities for advisory services, market information, financial transactions, and farm management, but access to devices and connectivity does not guarantee effective use. A recent participatory study with smallholder farmers in Nyandarua County, mainly women with varied literacy levels and limited access to AI-driven systems, argues for a human-centred approach to imagining and designing the future of digital dairy technologies ([Imagining the Future of the Dairy Industry, 2025](#)). Service providers should consider affordability, language, digital literacy, connectivity, usability, and access to support. These conditions matter particularly where services are designed around smartphone ownership or written digital content.

Disability inclusion, accessibility, and evidence gaps

Disability remains under-examined in the Kenyan dairy literature reviewed for this article. Without disaggregated data, it is not possible to determine how farmers with disabilities participate in dairy production, cooperative governance, extension, input and

service markets, or income-generating activities. [Sango et al. \(2022\)](#) surveyed people with disabilities working in agriculture in five northern Nigerian states and documented economic and sociocultural challenges. The study offers a regional illustration of why disability inclusion warrants explicit attention, but differences in national context and the absence of a dairy-specific focus limit direct transfer to Kenya.

Kenya's Persons with Disabilities Act, 2025 provides a current legal reference for disability rights and inclusion ([Republic of Kenya, 2025](#)). For dairy programmes, practical inclusion may involve accessible training locations, adapted equipment, accessible information, reasonable accommodation, transport considerations, flexible service delivery, and participation in decisions. These measures should be designed in consultation with people with disabilities rather than based on assumptions about their needs. Programme monitoring should record disability voluntarily and appropriately, protect privacy, and track outcomes as well as attendance.

Dairy Investors and Investments in Kenya

Kenya's dairy sector continues to offer significant opportunities for private investors across milk production, processing, aggregation, cold-chain infrastructure, animal feeds, genetics, farm services and value-added dairy products. Milk production increased from 3.98 billion litres in 2019 to 5.33 billion litres in 2024, a 33.9% increase, indicating a substantial expansion of the underlying market. Private investment has also generated scalable business models: for example, Brookside reports partnerships with more than 200,000 farmers across 27 counties, supported by more than 150 milk collection and cooling centres. At the processing and manufacturing level, Bio Food Products reported in 2024 that production increased by 20%, while factory waste declined by 30% and more than 39% of its operational energy came from solar, illustrating investment in both productive capacity and sustainability ([Maina et al., 2026](#)).

However, dairy investors face constraints that affect returns, scalability and investment risk. The cost of milk production increased from about KES 30 per litre in 2019 to KES 66 in 2024, while the sector remains dominated by small-scale producers, creating challenges in aggregation, consistency and quality. Investors also face inadequate cold-chain infrastructure, food-safety compliance costs, limited access to appropriately structured finance and uncertainty over the commercial viability of some newer technologies and business models.

The World Bank identifies cold-chain investment as an opportunity for private-sector participation but notes financing constraints, including high investment requirements, limited confidence in some technologies and the difficulty of using specialised equipment as collateral. Quality is another major concern: antibiotic residues and weak quality control can undermine consumer safety and market access ([Republic of Kenya, 2025](#)).

Key findings

Women contribute labour but do not always control assets and returns

Across the literature, women's involvement in dairy work does not consistently translate into equivalent control over cattle, income, or commercial decisions. Research on Kenyan dairy

commercialisation documents gendered meanings attached to cattle and milk income, while evidence from producer organisations indicates that membership can improve some dimensions of women's empowerment especially when women themselves are registered members ([Mwambi et al., 2021](#); [Tavener & Crane, 2018](#)).

Intensification may bring productivity gains alongside additional labour

Recent Kenyan evidence links adoption of herd-health management practices with higher labour requirements for both women and men, and with negative associations for some measures of women's empowerment, including livestock ownership and control over dairy income ([Maina et al., 2026](#)). This suggests that technology and management interventions should assess the distribution of labour and benefits, not only production outcomes.

Care responsibilities and climate stress constrain women's time

A study of integrated crop dairy-goat farming in Kenya found gendered divisions of work and reported that 86.6% of young women in the study experienced increased water-fetching responsibilities during climate stress ([Cheboi et al., 2025](#)). This evidence is from a mixed farming system rather than dairy cattle alone, but it highlights how water scarcity and feed shortages can reduce time available for training, paid work, and enterprise management.

Youth need viable commercial pathways, not training alone

Kenyan research associates youth participation in agricultural value chains with access to financial services ([Rogito et al., 2020](#)). A review of youth agripreneurship identifies additional barriers, including limited land, skills, information, mentoring, networks, infrastructure, and market access ([Ouko et al., 2022](#)). In a study of 384 dairy youth agripreneurs in Nakuru County, preferences and willingness to pay varied across climate-smart dairy technologies, demonstrating that youth are not a uniform group and that demand should be tested rather than assumed ([Okello, 2025](#)).

Producer organisations can enable inclusion but membership rules matter

Evidence from Kenyan dairy smallholders suggests that producer-organisation membership is associated with improvements in several dimensions of women's empowerment, with stronger effects when women are members in their own right. Effects also vary with the function of the organisation ([Mwambi et al., 2021](#)). At the same time, the Kenya Dairy Industry Sustainability Roadmap notes that land-ownership requirements can impede women's and young people's access to cooperative membership and identifies options such as household membership, women's and youth councils, and mentorship ([Kenya Dairy Board \[KDB\], 2023](#)).

Disability inclusion is under-documented in dairy research

The available Kenya-focused dairy literature rarely reports whether farmers with disabilities can access training venues, facilities, equipment, finance, extension, and markets. A study of 1,067 people with disabilities working in agriculture in northern Nigeria documented economic and sociocultural barriers, but its findings cannot be treated as direct evidence about Kenya or dairy farming ([Sango et al., 2022](#)). The key finding for Kenya is

therefore a research and monitoring gap: dairy programmes cannot reliably assess inclusion where disability is not measured.

women, youth and persons with disabilities. Assess outcomes by sex, age, disability and location, recognising that these categories overlap.

Conceptual frameworks from literature

Dairy inclusion and socioeconomic empowerment framework

This framework connects access to dairy opportunities with control over resources and measurable economic benefits for

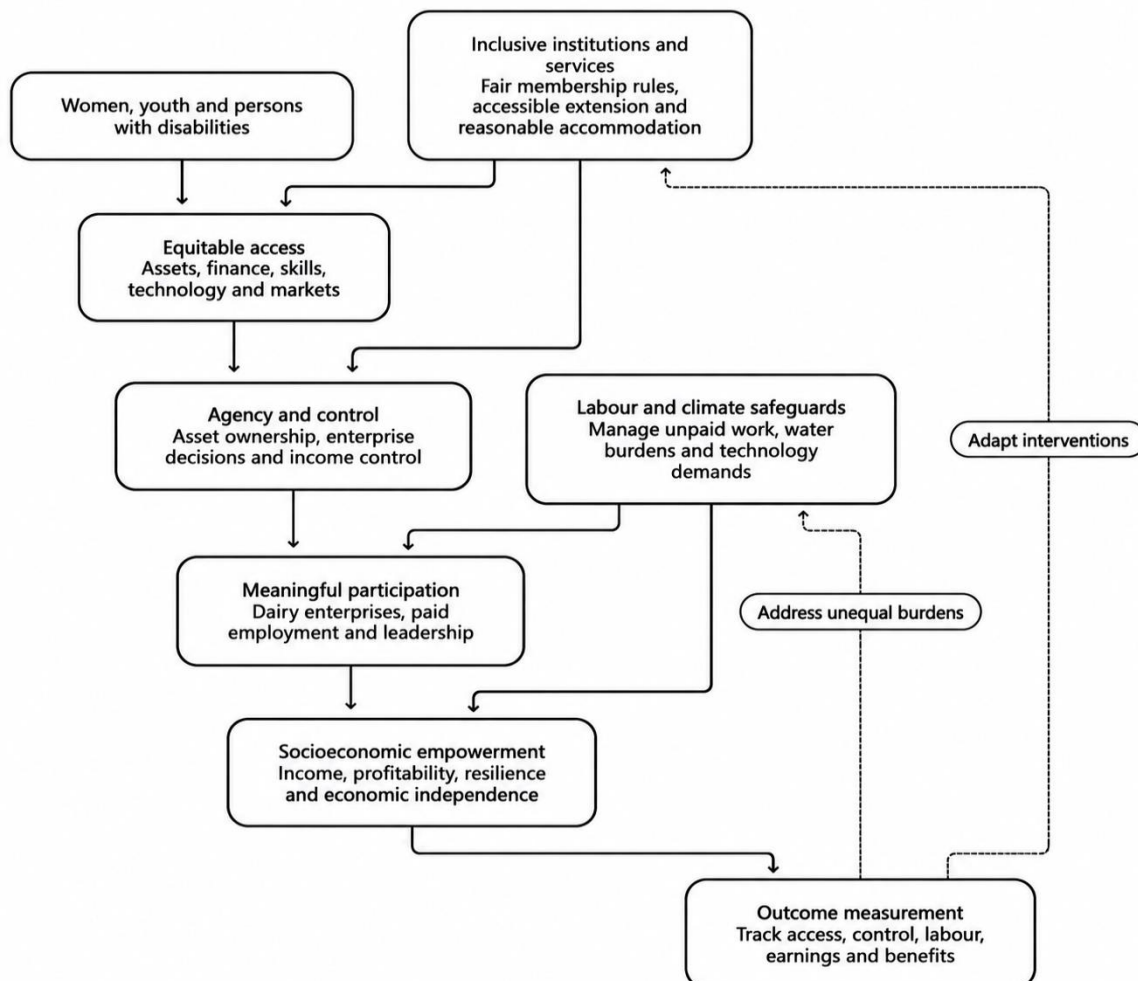


Figure 2: Dairy inclusion and socioeconomic empowerment framework. Source: Researcher made

Inclusive dairy investments and commercial viability framework

This framework links commercially viable investment across the dairy value chain with equitable opportunities and sustained benefits for farmers, workers and investors.

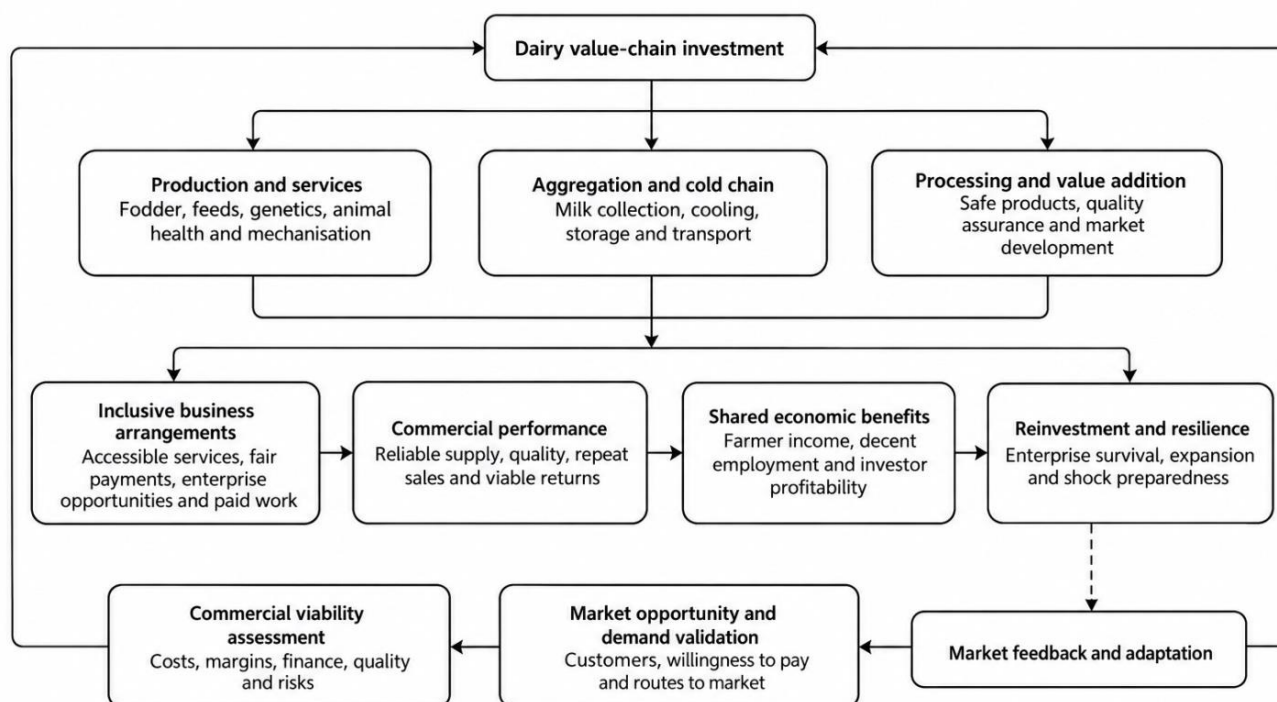


Figure 3: Inclusive dairy investments and commercial viability framework. Source: Researcher made

Both figures are conceptual frameworks derived from the narrative review. Their arrows show proposed relationships, rather than demonstrated causal effects.

Discussion

Taken together, the literature indicates that inclusion is better understood as the distribution of resources, agency, and benefits than as participation alone. Women may perform essential dairy tasks without equivalent authority over livestock, payments, and commercial decisions. New practices can improve production while increasing labour demands or shifting control over assets and income. Cooperatives may expand access and empowerment, but their effects depend on membership rules, organisational function, and women's representation. For youth, participation depends on whether training is connected to capital, productive assets, mentors, technologies, and paying markets. For people with disabilities, the limited evidence base itself constrains programme design and accountability.

The evidence also points to the need to avoid treating women, youth, or people with disabilities as homogeneous categories. Outcomes may differ by household position, age, gender, geography, production system, literacy, asset ownership, and type of market engagement. Technology adoption and cooperative membership should therefore be examined through an intersectional lens. For example, a young woman without land title may face different constraints from an older woman who controls a dairy enterprise; a youth seeking a service business may need different support from a young farmer seeking access to cattle.

A practical inclusive dairy strategy should combine access measures with evidence of benefit. Useful indicators include ownership and control of cattle and equipment; control over milk payments and use of income; participation in decisions; paid and unpaid labour time; access to finance, extension and technology; cooperative membership and leadership; youth-owned enterprises, jobs, sales and profitability; and accessibility of services for people with disabilities. Indicators should be disaggregated by sex, age,

disability, and relevant location where feasible. Baseline and follow-up measurement is needed to establish whether outcomes change over time.

Implications for policy and practice

- Measure control and benefit, not only attendance: track who owns productive assets, makes decisions, receives income, and has a voice in producer organisations.
- Link youth training to commercially viable pathways: combine skills with finance, mentorship, access to productive assets, market information, and opportunities to secure paying customers.
- Review cooperative membership and governance rules: assess whether land-title requirements, registration practices, payment arrangements, meeting times, or leadership procedures unintentionally exclude women and youth.
- Assess labour and time effects of dairy technologies: measure who performs new tasks and whether innovations increase or reduce unpaid work, especially under climate stress.
- Design digital and extension services for diverse users: consider language, literacy, affordability, connectivity, disability accessibility, and user support.
- Build disability inclusion into programme design: consult people with disabilities, provide reasonable accommodation, adapt facilities and communication, and monitor access to services and economic outcomes.
- Strengthen evidence and accountability: establish baselines, report disaggregated results, document

unintended effects, and commission Kenya-specific research on disability inclusion in dairy.

Key recommendations for application

- a. **Shift from measuring participation to measuring empowerment and economic benefit.** Dairy programmes should track who owns and controls cattle, land, equipment and other productive assets; who makes enterprise decisions; who receives and controls milk income; and who benefits from market opportunities.
- b. **Make women's control over dairy income and assets an explicit programme outcome.** Interventions should not assume that women benefit simply because they contribute labour. Women should have opportunities for individual or joint ownership, control of milk payments, financial services, and participation in commercial decisions.
- c. **Strengthen women's direct membership and leadership in producer organisations.** Cooperatives and producer organisations should review membership, voting, payment, leadership and meeting arrangements that may disadvantage women, particularly where membership depends on land ownership or livestock registration.
- d. **Design youth interventions around viable businesses rather than training alone.** Youth training should be connected to finance, productive assets, mentorship, technology, market information and actual customers. Opportunities should extend beyond dairy farming to fodder production, mechanisation, animal-health services, digital advisory, milk collection, cooling, input supply and value addition.
- e. **Use commercially tested pathways for youth participation.** Before promoting a technology or enterprise, programmes should establish demand, willingness to pay, costs, margins, customer segments and routes to market. Youth should be supported to build enterprises capable of generating sustained revenue rather than remaining dependent on projects.
- f. **Assess the labour and time implications of dairy technologies.** Productivity interventions should measure whether they increase or reduce workloads and who performs the additional work. Labour-saving technologies, water access, fodder services and flexible extension approaches should be prioritised where they reduce unpaid work burdens.
- g. **Integrate climate resilience with social inclusion.** Climate interventions should consider how drought, water scarcity and feed shortages affect women, youth and other farmer categories differently. Resilience should therefore include both farm productivity and the ability of different household members to maintain livelihoods and enterprise opportunities.
- h. **Make extension and digital services accessible to diverse users.** Extension and digital dairy services should consider literacy, language, affordability, connectivity, device ownership, disability accessibility and availability of human support. Digitalisation should

complement not automatically replace accessible extension services.

- i. **Institutionalise disability inclusion across the dairy value chain.** Dairy programmes should include people with disabilities in consultation, training, producer organisations, employment and enterprise opportunities. This requires accessible venues and information, reasonable accommodation, adapted equipment where necessary, and flexible service delivery.
- j. **Introduce inclusion-sensitive programme indicators and baselines.** Programmes should establish baseline and follow-up indicators disaggregated by **sex, age, disability and relevant location**. Indicators should include: productive-asset ownership/control; control of dairy income; participation in enterprise decisions; paid and unpaid labour; access to finance and extension; cooperative membership and leadership; youth-owned enterprises and employment; sales, profitability and enterprise survival; access to technology and markets; and resilience to climate and economic shocks.
- k. **Apply an intersectional approach rather than treating categories as homogeneous.** Women, youth and persons with disabilities should not be treated as uniform groups. Programme design should account for differences in age, household position, land ownership, location, literacy, asset base, type of disability and type of dairy enterprise.
- l. **Build accountability for unintended effects into programme design.** An intervention should be assessed not only for productivity gains but also for whether it unintentionally increases women's unpaid labour, concentrates income or assets in particular household members, or creates new barriers for disadvantaged groups.

Limitations

This article is a narrative synthesis, not a systematic review or meta-analysis. The underlying literature varies in method, location, sample, and focus. Some sources concern Kenyan dairy systems directly, while others address wider agribusiness, mixed crop–livestock systems, digital futures, or disability in agriculture outside Kenya. Findings from these contextual sources cannot be treated as representative estimates for all Kenyan dairy farmers.

Several recent studies are observational and report associations rather than establishing causation. The review also identifies a shortage of disability-disaggregated dairy evidence, limiting the strength of conclusions about the experiences of farmers with disabilities. Future reviews should use transparent database searches, explicit inclusion criteria, and systematic quality appraisal.

Conclusion

The available evidence shows that inclusive dairy development requires more than enrolling women and youth in training or introducing technologies. It requires attention to ownership and control of assets, income, labour, decisions, market access, and institutional voice. Producer organisations and digital

services can widen opportunities, but their benefits depend on how they are designed and who can access them. Youth engagement is more likely to translate into economic participation when skills are connected to finance, mentorship, productive assets, and commercially viable market opportunities.

Disability inclusion must be addressed explicitly through accessible services, reasonable accommodation, consultation, and better data. A dairy sector inclusion agenda should therefore embed gender, youth, and disability considerations across the value chain and evaluate success through changes in empowerment, income, employment, leadership, and resilience.

Areas for future research

- a. Disability-inclusive dairy research in Kenya. This is the most evident research gap. Studies should establish how persons with different types of disabilities participate in dairy production, cooperatives, extension, finance, employment and markets, and what reasonable accommodations enable economic participation.
- b. Longitudinal studies of women's empowerment. Research should follow dairy households over time to determine whether interventions actually change women's: asset ownership and control; control over milk income; decision-making power; workload; cooperative leadership; and economic independence.
- c. Gender effects of dairy intensification and technology. Future research should examine whether improved breeds, feeding systems, herd-health practices, mechanisation, fodder technologies and digital tools **reduce or redistribute labour**, and whether productivity gains translate into equitable control of benefits.
- d. Youth dairy enterprise economics. More evidence is needed on the profitability and survival of youth-led dairy businesses, including fodder enterprises, animal-health services, mechanisation, milk collection, cooling, digital services, input supply and value addition. Research should measure start-up capital, operating costs, revenues, margins, repeat customers and enterprise survival.
- e. Youth access to productive assets. Research should examine how land tenure, livestock ownership, family asset transfers, leasing arrangements and access to equipment affect young people's ability to establish independent dairy enterprises.
- f. Cooperative governance and inclusion. Future studies should investigate which cooperative membership and governance models actually improve women's and youth access to services, income, leadership and decision-making. Particular attention should be given to land-title requirements, household membership, payment systems and voting rights.
- g. Disability, technology and digital dairy services. Research should assess whether digital advisory, mobile financial services, digital marketplaces and farm-management technologies are accessible to people with different disabilities and literacy levels.

- h. Climate change, unpaid work and inclusion. More research is needed on how drought, water scarcity, feed shortages and climate variability affect women's and youth's time, labour, income and enterprise decisions within dairy households.
- i. Measuring control of income rather than household income alone. Future studies should distinguish between household income and individual control over income. Knowing that a household earns more from milk does not establish who controls the additional earnings or how they are used.
- j. Comparative research across dairy systems and counties. Studies should compare intensive, semi-intensive and pastoral/peri-urban dairy systems and examine differences across counties. This would help establish whether inclusion barriers are structural or context-specific.
- k. Evaluation of inclusion interventions. There is a need for stronger quasi-experimental and longitudinal evaluations of interventions specifically designed to improve inclusion—for example, women-only financial products, joint asset ownership, youth enterprise finance, accessible extension, cooperative reforms and disability accommodations.
- l. Intersectionality in dairy development. Future research should examine combinations of characteristics rather than analysing sex, age and disability independently. For example, young women, young persons with disabilities, women without land titles, and youth from low-asset households may experience substantially different constraints and opportunities.
- m. Develop a Kenyan dairy empowerment measurement framework. A useful research priority would be to develop and validate a Kenya-specific framework that measures inclusion across the dairy value chain using domains such as: The pathway to socioeconomic empowerment involves access to opportunities and resources, ownership of productive assets, participation in decision-making, control over income, meaningful market participation, leadership, employment, increased resilience, and ultimately improved economic benefits. This would help programmes move beyond conventional indicators such as numbers trained, cooperative membership or technology adoption.

Disclaimer

- The views stated in this article are those of the author and do not necessarily represent those of any of the entities mentioned.

Interest Conflicts

- The author declares no conflict of interest whatsoever in this publication.

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