

## Milk Value Chain, Gender Equity and Poverty Alleviation in Tanzania

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### **Abstract**

*Literature reveals that there is no consensus about how value chain interventions contribute to gender equity and poverty alleviation among different gender groups. This study was conducted to assess the prospect for enhancing gender equity and alleviating poverty under formal and informal market arrangements within the milk value chain in Tanzania. The study also examined changes in gender roles and relations in the chain. A cross-sectional research was designed and conducted in Tanga City and Iringa Municipality. Proportionate and systematic sampling techniques were used to identify respondents to participate in the study. Descriptive statistics were computed using SPSS and ethnographic content analysis was used to analyse qualitative data. The study found that men and women are important actors in the milk value chain but the extent of their participation differ significantly. The participation of men and women in the milk value chain has increased both their earnings and workload. There are gender specific constraints that hinder the performance of men and women in the milk value chain such as limitation on mobility, access to and control of resources, and decision making over income accrued from dairying. Some traditional social norms and practices also hinder women's participation in some activities within the value chain like engaging in more rewarding milk markets. The study recommends that market development programmes should understand location specific gender contexts to avoid generic intervention that may exacerbate the existing gender inequity.*

**Keywords:** Value chain participation, Milk Value Chain, Gender relations and equity, Poverty alleviation

### **INTRODUCTION**

Promoting gender equality and empowering women remains a priority. The development agenda, Women empowerment is, ranked third in the Millennium Development Goals and many countries in the world aim to

improve women's economic power and access to markets as crucial aspects for achieving sustained economic growth and poverty reduction (UN Women, 2023). Many interventions in the agricultural sector that aim at reducing poverty increasingly adopt the value chain approach as a strategy to increase the income of small-holder farmers and producers. However, gender equity and the impact of women's participation in value chain have remained poorly understood and difficult to generalize (FAO, 2022).

The importance of agriculture in fostering socio-economic development of developing countries like Tanzania cannot be overstated. The Tanzanian government has invested considerable efforts and resources in transforming agriculture, with a focus on improving agricultural production and market access for poor producers (United Republic of Tanzania [URT], 2020). The multipronged approach adopted in improving agriculture has also incorporated the value chain approach, anticipating that it will allow farmers to have more access to local, regional, and global niche markets for their products, thereby enhancing their potential to increase earnings and reduce poverty. Gender reflects all aspects of activity, including access to resources for production, rewards or remuneration for work, and distribution of benefits.

While agriculture is a predominant economic activity in rural Tanzania, the growing trend of rural-urban migration has also resulted in urban agriculture becoming an important economic activity. Despite competition with other, arguably more lucrative enterprises, urban agriculture is crucial to the urban economy because it provides employment and investment opportunities while also reducing food insecurity for a large proportion of the urban population (Orsini et al., 2020). Some studies have indicated that urban agriculture has the potential to stimulate growth in rural areas because people moving to urban areas tend to maintain social and economic relationships with their original rural areas, and these relationships tend to be symbiotic (Tacoli & Agergaard, 2021).

People engaged in urban agriculture in many towns and cities in Tanzania earn income by growing vegetables, producing milk, and raising poultry for meat and eggs. It has been established that in many cases, livestock keeping and the sale of milk are even more important activities as income sources than crop cultivation (Ngaira & Omukuba, 2019). Such trends

suggest that milk production is an important economic activity in Tanzania and has the potential to contribute to household wellbeing and food security. However, gender inequalities that exist in many areas may undermine the benefits that women and children receive through their participation in the milk value chain.

Although there is extensive literature on gender and value chains (e.g., Laven et al., 2019), such literature is insufficient with respect to opportunities for value chain participation and how such opportunities work differently for men and women who are involved. Thus, there is no consensus about how value chain interventions contribute to gender equity and poverty alleviation among different gender groups. Women's empowerment has been identified as an important issue that occurs when pro-poor avenues for value chain participation are designed and implemented. Therefore, it is crucial to understand where gender and value chains intersect. It is at these intersection points where opportunities for empowerment occur, avenues for more wealth accumulation and control over resources and major decisions exist, and transformation of gender power relations takes place (Laven et al., 2019; Jeckoniah et al., 2023).

According to Laven et al. (2019) such intersections are found in different aspects. The first is the sexual division of labour within the chain and within the households. This intersection questions the impact of newly created work that women and men take up within the chain and its impact on gender relations and wellbeing. The second interaction involves the sexual division of labour as well as access to opportunities and management roles within the chain. These intersections seek to understand where within the chain women and men are actively involved and the differential impact of such participation on control of income earned from value chain activities. These intersections are also benchmarked for exploring other gender issues encompassing decision-making processes within the household. It has also been reported that when women's income increases, men tend to withdrawal their contribution from some household expenditures (Jeckoniah et al., 2013), thus imposing an extra financial burden on women.

Men's withdrawal from contributing into household expenditure undermines women's benefit from their participation in income generating activities such as participation in value chain activities. Thus,

while women involvement in milk value chains might be high, the impact of such participation on welfare could be lower among women than men however; there have been few attempts to discern the effects of different options for value chain participation among smallholder fanners (men and women) on their earnings and poverty levels.

This paper adopts the conceptual framework on gender, value chain, and women's empowerment developed by KIT et al. (2016) and Laven et al. (2019) to investigate gender issues within the dairy sector in Tanga and Iringa regions, Tanzania. Under this framework, it is important to understand how men and women adopt different strategies for value chain participation and the impacts of such decisions on their welfare.

According to this framework, gender issues and dynamics are not restricted to the arena of the chain itself. Hence, one has to take the household and community context into account to assess what issues constitute critical constraints for women or how changes in the chain impact on gender equality. The framework can potentially highlight the intersections between gender and value chains in agriculture to underscore the impact of different strategies for value chain participation on gender equity.

Conceptually, equity is a state of fairness and justice, where the unique needs of specific groups such as men and women are recognized and addressed. Unlike gender equality, which advocates for equal access to opportunities regardless of gender, equity acknowledges the different life experiences, needs, and levels of power held by men and women (UN Women, 2023). These differences necessitate tailored approaches to achieve equitable outcomes. For instance, policies may require different treatment for men and women to ensure fairness in achieving similar results (Crush & Battersby, 2019). From a policy perspective, gender equity implies that development initiatives should take into account the different realities faced by men and women. Interventions must be designed in a way that recognizes their respective interests and needs (Jeckoniah et al., 2020). This approach can enhance the effectiveness of gender-focused policies by ensuring they cater to the diverse experiences and challenges faced by each group (Ministry of Agriculture, 2021).

The paper is based on a project that was designed to reduce income poverty among people who are involved in two dairy value chains in

Tanga City and Iringa Municipality in Tanzania. The paper examines gender roles in the dairy sector to discern the impact of value chain activities on gender equity and poverty alleviation focusing mainly on roles performed, its implication on workload and participation in the value chain. The paper offers a comparative case between the two study areas on how gender dynamics differently affect value chain participation and actor's welfare. Findings of this study give insights with respect to how market development initiatives to improve the wellbeing of chain actors may identify, affect and be affected by gender dynamics.

The paper is structured in four sections including this introduction. Section two describes the methodology while section three highlights the main findings. The last section gives concluding remarks and policy implications.

## **METHODOLOGY**

This study was conducted in Tanga City and Iringa Municipality in Tanzania. These urban areas represent two distinct milk collection and marketing arrangements. In Tanga, milk collection centers organized by farmer groups are well developed, supported by the Tanga Dairy Development Programme (TDDP). The TDDP has been supporting the Tanga Dairies Co-operative Union (TDCU), an apex organization consisting of 10 primary co-operatives in five districts to promote joint marketing of milk produced by small-scale dairy farmers. In contrast, milk processors in Iringa Municipality have established their own milk collection centers to source milk from producers. These two cases represent market arrangements found elsewhere in Tanzania and were considered appropriate for drawing specific lessons with respect to gender issues encompassing the role of actors, their access to resources, involvement in decision-making, and control over production resources as well as earnings from dairying.

The study adopted a cross-sectional research design, collecting both quantitative and qualitative data. The main tools for data collection included a questionnaire for household interviews and a checklist of questions for focus group discussions and interviews with key informants. Data were collected between November 2021 and February 2022. Ten wards that were actively involved in dairying and milk marketing were purposively selected. The wards selected from Tanga City were Nguvumali, Mzizima, Tanga, Pongwe, and Makorora; while those from

Iringa Municipality were Mtwivila, Gangilonga, Kitwilu, Mwangata, and Isakalilo.

The sample size was established using the formula developed by Fisher et al. (1991), which is still widely used in social science research (Taherdoost, 2017). A combination of proportionate and systematic sampling techniques was used to select respondents who participated in the study. The list of farmers comprising names of all dairy keepers in respective wards was obtained from Ward Extension Officers and served as a sampling frame. Other actors involved in the milk value chain such as processors, transporters, retailers, and extension officers were identified for in-depth interviews to capture their specific knowledge and experience in the value chain. They were also invited to participate in focus group discussions and interviews as key informants.

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 26, where descriptive statistics for quantifiable variables were computed. Content analysis was used to analyze qualitative data from focus group discussions and interviews with key informants, following the guidelines outlined by Erlingsson and Brysiewicz (2017). This methodology allowed for a comprehensive examination of gender roles in the dairy sector, discerning the impact of value chain activities on gender equity and poverty alleviation. The comparative case between the two study areas provided insights into how gender dynamics differently affect value chain participation and actors' welfare.

## **FINDINGS AND DISCUSSION**

### **Gender Roles and Relations in the Dairy Value Chain**

Although the study was conducted in Tanga City and Iringa Municipality, the sampled respondents revealed characteristics of typical farming communities in Tanzania where agriculture (including keeping animals) is the main economic activity.

About half of the respondents in both study areas depended on farming as the main economic activity (59% and 48% for Iringa and Tanga, respectively). Other important economic activities included business (32%) and employment (29%) as civil servants, self-employed, and employment by different NGOs. These findings align with recent studies on urban agriculture in Tanzania (Mkwela, 2020; Mwakalalila &

Mwansasu, 2021), which highlight the continued importance of farming in urban areas.

Dairy value chains in Tanga City and Iringa Municipality are generally smallholder-based whereby the average number of dairy cattle was two and three for Tanga and Iringa, respectively. In general, there is marked fluctuation in milk production during low and high seasons. For example, during the high season, majority (69.5%) of the households in Tanga City produced 11 - 20 litres of milk per day, while during the low season only 45.8% of the respondents were able to produce this quantity. In Iringa Municipality, 37.3 % of the respondents produced similar quantity during high season while during the low season only 16% of the respondents managed to produce such a quantity. Free grazing was the most common form of livestock keeping, although some supplementary feeds, especially fortified feeds and minerals were provided. Zero grazing was also practiced where animals remain indoors and feeds are brought into the animal's shed. Milk production and marketing entail some labour intensive activities. The majority of households often use family labour to do most of the activities. Table 1 presents information on how different members of the household participated in activities related to dairying.

**Table 1:** Proportional participation in dairy value chain activities (n=118)

Activities	Tanga City (%)					Iringa Municipality (%)				
	M	F	MC	FC	HL	M	F	MC	FC	HL
Herding	28.8	11.0	11.0	1.4	47.9	35.5	11.3	7.9	0.0	45.2
Cutting grass	42.6	0.0	11.5	3.3	42.6	19.4	2.8	18.0	5.6	54.2
Feeding	18.8	15.9	17.4	4.4	43.5	9.8	17.0	9.8	8.6	54.9
Giving										
Drinking water	17.4	13.1	18.8	4.4	46.4	7.4	15.3	12.2	11.1	54.0
Shed cleaning	21.2	8.1	17.7	2.4	50.7	12.5	13.6	17.0	4.6	52.3
Milking	25.8	9.3	19.6	2.1	43.3	14.4	12.0	19.3	3.6	50.6
De-worming	65.4	10.4	0.0	0.0	24.2	42.3	11.6	15.4	3.9	36.9
Purchases feeds	58.8	5.9	11.8	3.9	19.6	34.7	17.3	19.2	7.7	21.1
Selling milk	28.3	23.0	14.9	5.4	28.4	1.6	36.4	16.6	6.1	30.3
Record										
Keeping	64.8	16.2	5.4	2.7	10.8	25.9	32.2	9.7	13.0	19.2
Contractual										
Agreement	84.3	11.2	2.3	0.0	2.3	13.1	73.8	8.7	4.4	0.0
Payments										
Collection	72.7	20.5	2.3	0.0	4.6	20.4	57.7	11.6	6.8	3.4

Key: M=Male, F=Female, MC=Male Child, FC=Female Child, HL=Hired Labour



The findings presented in Table 1 reveal gendered patterns in performing different activities, which also varied across the two study areas. The results reveal marked difference in activities that men, women children and hired labour perform within the milk value chain. For example, in Tanga City, hired labour and men dominated in all activities while in Iringa region hired labour and women dominated in activities such as feeding the animal, giving drinking water, selling milk, engaging in contractual agreements and collecting payments. Children (particularly male children) were also involved in some activities especially in selling milk and feeding the livestock, but the combined contribution of children was not dominant in any of the activities. Traditional gender division of labour and cultural differences play a part in deciding what men and women should do. This was revealed during focused group discussions at the two sites. One participant in Tanga said:

*"It is the culture of people living along the coast that most of the economic activities especially those involving moving away from home are done by men; women are responsible for all other activities that are done at home, including housekeeping and taking care of children. "(FGD participant, Tanga)*

This study found that most of the activities at the production level were dominated by men, for example 25.8% men as compared to 9.3% women in Tanga were responsible for milking whereas in Iringa 14.4% of men as compared 12% of women were involved in milking. These findings show that the practice in terms of division of labour in the study area differs from that in Maasai pastoral communities in Tanzania where milking is traditionally perceived to be an activity for women. It has also been reported in the literature that many activities that are usually done by women are taken over by men when they acquire more monetary value and become the main source of cash income or when technology improves (Chenyambuga et al., 2020; Makindara et al., 2022). Generally women involvement in other nodes in the dairy value chain was relatively low especially in activities that reflect control of assets and final decision over resource use. For example, 84.3% of men as compared to only 11.2% of the women in Tanga were responsible for contractual agreements. In Tanga, men were also more responsible for collecting money than their women counterpart (72.7% and 20.5% for men and women, respectively). The study also found that both in Tanga City and Iringa Municipality, hired labour were involved in many production activities. This reflects the



level of commercialization where incomes from dairy activities are used to pay for the hired labour.

At the processing node, especially for activities done within the households; women undertake most of the activities such as boiling fresh milk. At the household level women were also identified to have more control over the use of equipment for milk processing, which included normal household utensils such as jars for boiling and cans for storage.

### **Milk Outlets and Changes in Workload**

The dairy value chain in Tanga and Iringa represent two distinct milk marketing systems for dairy fanners. Most of the milk produced in Tanga was sold through collective arrangements involving farmer's organization. However, many dairy fanners in Iringa Municipality sold milk individually to neighbours, street vendors as well as hotels and restaurants. The study established that only 27.1 % of the dairy farmers in Iringa sold milk through established collection centres operated by a major processor compared to 71 % in Tanga who sold milk through collection centres managed by the cooperative (Table 2).

Dairy fanners that produce low quality milk for the informal market cannot produce beyond what the market can take and this reliance on local spot markets normally leads to losses during surplus production. Furthermore, dairy fanners under this category are often uncertain about securing markets as they rely on spot market where the demand and earnings fluctuate over time. These problems may particularly be more severe to women, who are constrained to search for alternative markets as they assume more family obligations and means of transportation (e.g. ox-cart) are not appropriate.

**Table 2:** Size of Milk Markets in Iringa and Tanga (n=118)

<b>Location</b>	<b>Market</b>	<b>Market share (%)</b>
Iringa	Vendors	42.4
	Restaurants and neighbours	30.5
	Milk collection centres and processors	27.1
	Total	100
Tanga	Vendors	16.9
	Restaurants and neighbours	11.9
	Milk collection centres and processors	71.2
	Total	100

In terms of workload, women's involvement in the dairy value chain has been an additional activity to what they normally do within the households, which leads to increased work load. This study found that 84.4% of women and 73.3% of men reported that their involvement in the dairy value chain has increased their workload. Generally, less than a quarter of all respondents (22.9%) reported reduced work load with respect 'to their participation in dairy value chain. However, such changes in work load have been reported more by men than women (26.7% and 15.6% for men and women, respectively). Relatively, there were more cases of increased workload for men in Tanga City than Iringa Municipality. Such differences were attributable to the influence of culture and traditions.

The results presented in Table 2 show that many respondents (71.2%) in Tanga sold milk through established collection centres for further processing while in Iringa only 27.1 % of respondents sold their milk to this market outlet. In Tanga city 16.9 of milk was sold to vendors and 11.9% to restaurants or neighbours while in Iringa Municipality 42.4% of respondent sold their milk to vendors and 30.5% sold to restaurants or neighbours (Table 2). Other studies show that milk markets in Tanzania rare predominantly informal (Kilima et al., 2020; Msalya et al., 2022). This study found that the preference for informal market was particularly high among inefficient small scale dairy farmers (the majority in both sites) who produced limited amount of milk that could be -, easily sold to consumers in this market. Medium and large scale dairy farmers (estates) preferred the formal market (processors) with sufficient capacity to absorb surplus milk.

In addition to the problem of limited options for marketing channels, other factors were also reported to influence the selection of marketing channels. Finding presented in Table 3 reveal that marketing arrangements, particularly the reliability of market outlets, influence producers' decision regarding where they sell milk. However, other factors such as limited means of transportation hindered some chain actors to access lucrative markets. About a quarter (27.1%) of respondents in Iringa Municipality. were unable to sell milk in places that offered better prices due to difficulties they faced in transporting milk to such places.

**Table 3:** Reasons for selecting a Market (n=118)

Factor/Reason	Tanga %	City	Iringa %	Municipality	All %
Reliability of the market	55.2		30.5		42.7
Relatively high price	15.5		33.9		24.8
Seasonality in production	12.1		8.5		10.3
Inability to transport milk to places with high price	17.2		27.1		22.2
Total	100		100		100

### Gender Roles in Milk Marketing

Results in Table 4 show that more women were engaged in selling milk except at the level of hawkers and when milk had to be transported to distant markets. There was higher participation of women in milk marketing' in Iringa Municipality than Tanga City. Such differences reflected the variation in market arrangements where collective marketing was dominant in Tanga City while individual sales were common in Iringa Municipality. Moreover, it is culturally uncommon for women to engage in activities that require travelling as they assume dual roles-as caretaker of families and producers of milk and other agricultural products.

Furthermore, dairy farmers residing far from collection centres use bicycles, animal carts and other means of transportation to take milk to the collection centres. These means of transport are commonly used by men, thereby imposing a constraint for women to participate. Women's participation in milk marketing in Tanga was relatively higher than that of men in Iringa Municipality where a significant proportion of milk was sold to neighbours around their homestead and to milk vendors who collected the milk directly from producers.

**Table 4:** Participation in milk marketing (n=118)

Marketing channel	Tanga %	City	Iringa %	Municipality	All %
Men participating	25.4		11.9		18.6
Women participating	28.8		40.7		34.7
Both Men and Women	35.6		22.0		28.8
Hired labour/children	10.2		25.4		17.9
Total	100		100		100

Milk marketing is an important income generating activity that allows women to improve their livelihood. In Iringa Municipality, where more

women sell milk directly to their customers, they have a better chance of using part of the money to meet immediate family needs unlike in Tanga where contractual agreements for selling and collecting the money are predominantly men's responsibility. Many milk hawkers in both Tanga and Iringa were men. The predominance of men in milk vending and long distance sales was mainly an outcome of their ability to travel long distances in search of milk or customers, which was among important factors for one to venture into this business. It is important to note that milk vending entails staying out of the home for long hours, thereby constraining the participation of married women who are expected to do all other household chores. A similar trend has also been reported in relation to low participation of women in milk vending in Dar es Salaam, Arusha and Kilimanjaro due to their limited mobility (Nombo and Sikira, 2019).

### **Access to Resources and Decision Making in Milk Value Chain**

Access to and control of important production resources normally determines the performance and impact of an activity on participants' gains. Table 5 present findings on who makes the final decision over the assets owned in the household. The findings show that women and men had equal access to resources in both Tanga City and Iringa Municipality. However men had an upper hand in controlling and using important resources that are necessary for dairying. Such difference in control of resources reduces women benefits from their participation in dairying. Similar trends on women's ownership of resources have been reported in recent studies (Mwaseba & Kaarhus, 2022; Sikira & Rwegoshora, 2023). During focus group discussions it was revealed that gender differences in access to and control of resources is rooted in cultural values and practices where men are expected to make final decision in all household matters.

**Table 5:** Control over resources (n=118)

<b>Resources</b>	<b>Tanga City (%)</b>				<b>Iringa (%)</b>	<b>Municipality</b>		
	<b>Male</b>	<b>Female</b>	<b>Both</b>	<b>Total</b>		<b>Female</b>	<b>Both</b>	<b>Total</b>
Cattle	50.8	5.2	44.0	100	40.7	18.7	40.6	100
Equipment	66.1	3.4	30.5	100	39.0	15.2	45.8	100
Hired Labour	50.0	5.2	44.8	100	32.2	15.1	52.7	100
Credit	72.8	5.2	22.0	100	30.5	13.5	56.0	100
Income	20.4	8.5	71.1	100	17.0	15.2	67.8	100

The study also found that gender differences are deeply rooted at the family and society levels. For example, among Wahehe tribe a man who allows his wife to make final decisions over household matters is looked down at and labelled as "Msogose" meaning a weak person who is controlled by his wife. Religious teaching was also mentioned maintaining traditional gender division of labour and participation in decision making at the household level. For example, one participant in a focus group discussion in Iringa insisted "... we are frequently told and reminded in the churches and mosques that a man is the head, leader, the owner of the family and a woman is a helper ... ". Such beliefs deny women the option to fully participate in decision making at the household and community levels. Nonetheless, women in Iringa Municipality appear to have higher control over resources for dairying than those in Tanga City, an indication of ongoing changes in gender relations and division of labour, to reflect prevailing economic realities. This study did not establish reasons for this difference although land tenure systems and the way land and other resources are passed over from one generation to another may account for the difference.

## **CONCLUSION**

This study has underscored that both men and women play important roles in milk value chain development. However, the involvement of men and women differ significantly across locations and there is a clear gender division of labour in the value chain. The study has also identified major challenges that need to be addressed to bringing about gender equity and poverty reduction among women and men in the milk value chain. Such challenges include socio-cultural issues and practices which influence and reinforce division of labour where there is less women participation in value chain activities. Men assume predominant roles in production, marketing and making decisions regarding the use of resources for dairying and distribution of income earned from this activity. The study also established that apart from improving households' earnings, participation in the value chain has also increased the work load of both men and women; a reflection of increased adoption of recommended dairy practices pioneered through project interventions.

The study has also identified a number of gender specific constraints that hinder the performance of both men and- women in the milk value chain. Poor access . to improved transportation, unequal access to and control of resources required for milk production, and participation in decision

making regarding the use of income accruing from dairying are the main gender based constraints in the milk value chain. Gender constraints related to conservative social norms and practices were also identified. Hence, apart from addressing income poverty, market development programmes should also address women and men empowerment in order to facilitate equitable participation and benefit sharing between women and men participating in the milk value chain. There is also a need to develop simple and appropriate technologies, which will improve the performance of milk value chains and reduce the workload, especially among women.

Having reliable marketing arrangements and enhancing the participation of women and men in milk marketing has been identified to be crucial in boosting income at the household level. The study has also noted that some of the transformation in gender roles has increased the workload for men in Tanga and women in Iringa. However, in both cases, men still have an upper hand in decision making over the use of income. Understanding the position of women and men in the dairy value chain should therefore be the focal point when designing and piloting value chain development interventions. Market development programmes need to understand and adapt to location-specific gender context to avoid proposing generic intervention, which may exacerbate prevailing gender inequity.

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