



# INCLUSIVE GROWTH

MAKING VALUE CHAINS  
WORK FOR SMALLHOLDER  
FARMERS





**ISLAMIC DEVELOPMENT BANK**  
AGRICULTURE INFRASTRUCTURE DIVISION  
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VALUE  
CHAINS

## CHAPTER 4

# LIVESTOCK VALUE CHAINS THAT FOSTER INCLUSIVITY AND SCALING UP

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 INNOVATION

LMIC

INFORMAL  
MARKETS

## KEY MESSAGES

- ◆ The systems approach to sustainable agri-food value chain (VC) development is fundamental to relieving constraints for smallholders and ensuring inclusive and sustainable growth with positive economic, social and environment impacts.
- ◆ In low- and middle-income countries (LMICs), most livestock products are produced by smallholders and are marketed informally. Demonstrated approaches exist for upgrading these VCs to improve product quality and livelihood opportunities.
- ◆ Livestock VCs also offer particularly important opportunities for income and asset accumulation for women and vulnerable members of society, such as the landless. Livestock can at times be the most valuable asset available to them.

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# CHAPTER 4 LIVESTOCK VALUE CHAINS THAT FOSTER INCLUSIVITY AND SCALE



## INTRODUCTION

**G**lobally, the livestock sector accounts for roughly 40% of agricultural gross domestic product (GDP) (Salmon et al, 2018). In individual low- and middle-income countries (LMICs), livestock makes a significant contribution to GDP and its importance is growing. Many of those countries are also member countries (MCs) of the Islamic Development Bank. This growth in the role of livestock is driven by several factors, including population increases, urbanization and economic growth. As incomes rise, people consume more high-value products such as meat, milk, eggs, fish, fruit and vegetables, and fewer staple crops. It is estimated that the demand for animal-source foods (ASFs) will double or triple in LMICs by 2050.

This represents a huge opportunity for the many millions of smallholder livestock producers to satisfy this demand and increase their incomes. The vast majority of livestock in LMICs are kept by smallholders and pastoralists. In East Africa, for example, 60-90% of milk is produced by smallholders with fewer than six cows. In India 92% of chicken meat, 92% of sheep and goat meat, 69% of milk and 71% of eggs are produced by farmers with less than 2ha of land. While larger-scale production of livestock will increase, projections show that small-scale production will continue to dominate in the near to medium term. Additionally, of the 750 million poor people who depend

## IN EAST AFRICA

# 60-90%

**OF MILK IS PRODUCED BY SMALLHOLDERS WITH FEWER THAN SIX COWS.**

on livestock globally, two-thirds are women. Women can often own livestock in situations where they cannot easily own other assets such as land.

Livestock value chains (VCs) can drive economic growth beyond producers in rural areas by providing employment in supplying inputs and services, trading, processing and retailing for men and women, including young people. The UN's Food and Agriculture Organization (FAO) has found that the income multipliers from livestock across a VC can be as high as five, more than crops (Ahuja, 2012).

Animal-source foods (ASFs) such as milk, meat, eggs, fish are also critical to achieving a healthy diet in LMICs. Over 150 million children under the age of five in developing countries are chronically undernourished or stunted. Stunting affects cognitive development and learning ability and can permanently reduce the ability of children to reach their potential. There is a growing body of evidence

that even a small increase in the consumption of ASFs can dramatically reduce stunting and other effects of malnutrition.

In spite of the demonstrated importance of livestock to people and communities, only 2.5% of total agricultural official development assistance to LMICs goes to livestock, according to the OECD. The reasons for this are many and may include decision-makers' prioritizing crops for food security purposes or simply a lack of awareness on their part of the important multiple roles that livestock can play in peoples' lives and communities.

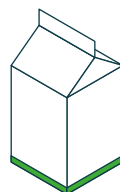
The objective of this chapter is to present evidence and documented experiences in practical options for effective investment in livestock VCs that generate inclusive growth at scale. The chapter is organized around a set of five 'principles' for livestock VC development. For each of these, evidence is presented to help guide decision-makers and development agents. Each principle also includes case studies to provide practical examples of livestock interventions that have been documented to have worked at some scale and in an inclusive manner.

## 1. RESEARCH THE MARKET AND DO NOT OVERLOOK THE INFORMAL

An initial activity in any livestock VC development effort is to thoroughly understand the market opportunities, whether for live animals or intermediate/final consumer products. The presence of existing markets may not be evidence of growth opportunities.

A useful principle is to look locally before looking further afield. In terms of volume, domestic and regional markets may offer the best opportunities. Although international trade in livestock products such as milk powder and frozen poultry receives a high level of public and media attention, as a share of production such trade is generally low. In 2016, in value terms, only 2.5% of global milk was traded across borders and only 12% of poultry meat. The majority of livestock products are consumed in the countries in which they are produced, which is particularly true in LMICs.

The tendency of many decision-makers is to look for international export opportunities with an eye towards generating hard currency. These decision-makers may not recognize that successfully participating in such markets is constrained by a number of barriers, including the requirements for high standards in product quality, consistent volumes of supply, and adherence to sanitary and phytosanitary (SPS) measures. In a study of potential meat exports from Ethiopia, Rich et al. (2009) found that the costs of such exports were prohibitive, in particular the costs of fattening and finishing the animals to achieve



2.5% 12%

**IN 2016, IN VALUE TERMS, ONLY 2.5% OF GLOBAL MILK WAS TRADED ACROSS BORDERS AND ONLY 12% OF POULTRY MEAT.**

the degree of product quality that the market demanded. This is partly why export abattoirs in Ethiopia operate significantly below capacity.

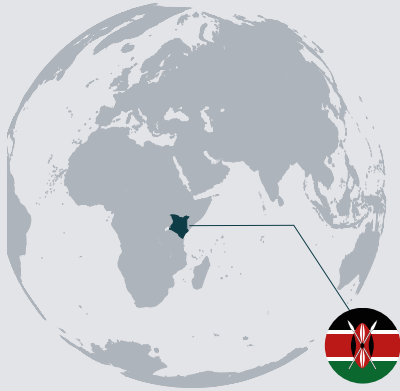
Regional markets, particularly for live animals but also for products such as milk, can and do present opportunities. In southern Africa, the regional livestock trade has become well developed, based on exports of both live animals and products. In the Middle East, the Arabian Peninsula is a major demand center for live animals such as sheep, including from the Horn of Africa. Uganda, now recognized as having among the world's lowest costs of milk production, has in recent years become a significant exporter of milk powder, mostly to regional markets. Investments by IsDB in the livestock sector there, especially in strengthening producer associations, has contributed to this growth. Additionally, IsDB is supporting regional programs for developing livestock among agro-pastoral communities in several of its MCs in sub-Saharan Africa. The programs operating in the Sahel region of West Africa as well as the drylands of East Africa have a strong emphasis on market development and conflict management between the farming and pastoral communities.

## SELLING TO THE BOTTOM OF THE PYRAMID

A principle that some firms have embraced to address domestic markets is that of selling to the 'bottom of the pyramid' (Prahalad, 2009). This recognizes that the large populations of lower income consumers have some degree of disposable income that they will expend if products are low cost and, importantly, are packaged and marketed in ways that suit their needs. A key example is selling milk in small plastic sachets of 200ml, which a number of companies now do in Kenya. The previous standard of 500ml was constrained by the lack of refrigeration in consumer households.



## CASE STUDY 1 | UPGRADING INFORMAL MARKETS IN KENYA

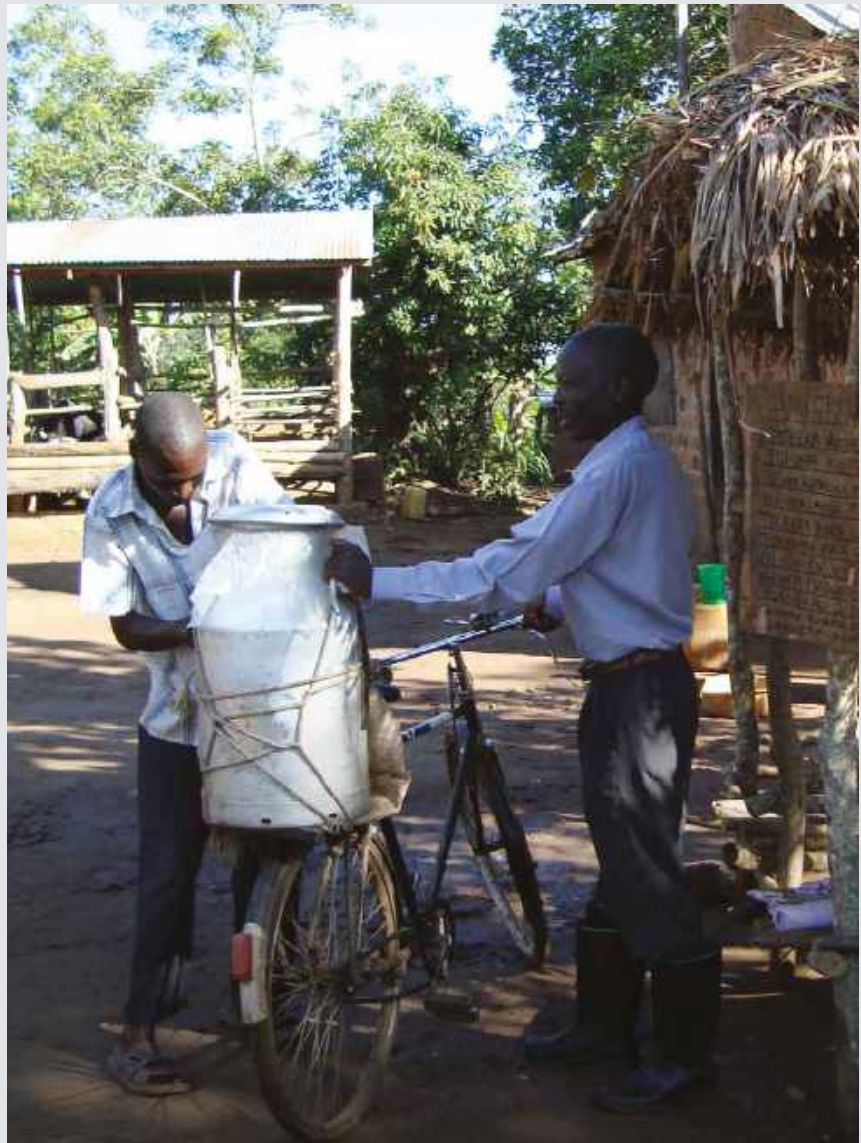


A good example of upgrading informal markets comes from the Kenya dairy sector, which for many years has been dominated by raw milk traders.

The Smallholder Dairy Project (SDP) – a collaboration from 1997-2005 between the Kenya Ministry of Livestock Development, the Kenya Agricultural Research Institute and the International Livestock Research Institute – found that small-scale raw milk traders (hawkers) had little understanding of milk hygiene and handling, having never received any training.

The project developed a training curriculum focused on hygienic milk handling, quality control and entrepreneurship. This was done in consultation with the Kenya Dairy Board (KDB) in order to maintain its awareness and approval. After successful piloting, a local NGO was engaged to take over the hawker training.

This led to a multi-component strategy: developing the capacity of the local NGO to conduct the training, including accreditation by the KDB; training market actors in hygiene and entrepreneurship, on a fee basis; and certification of market actors who met specific requirements of the KDB. The result was higher quality milk to



The Smallholder Dairy Project (SDP) developed a training curriculum focused on hygienic milk handling, quality control and entrepreneurship

Photo credit: ILRI/Ben Lukuyu

consumers, including the poor, and more sustainable and remunerative market enterprises. The benefits to farmers and consumers was estimated to be worth US\$ 30 million a year (Kaitibie et al., 2010).

In time, KDB came to view the training and certification of raw milk traders as an intermediate step towards formalizing

the country's small-scale milk trade rather than as a means to promote raw milk trading. Key to bringing about the change was the realization by politicians that they could use this approach to show their constituents that they were constructively addressing the raw milk market issue.

Similarly, there remains strong demand and potentially large markets in many countries for traditional and indigenous products. Indeed, in most LMICs the informal markets for livestock and livestock products are far larger and more important economically than the formal markets. Informal or traditional markets for livestock products are considered here as those that do not apply internationally recognized processing, handling, and packing practices, but that instead depend on traditional local practices to deliver raw or traditionally processed products to customers.

Informal markets are not necessarily operating entirely outside of government regulations. In many cases, informal market actors may pay local municipal operating licenses and fees, even while they may not comply with other regulations or taxes. Also, in many cases the formal and informal markets are closely interlinked and not easily differentiated. In East Africa, local motorcycle milk traders may buy raw milk from formal cooperative chilling plants and then sell it informally as bulk raw milk to individual households or food establishments.

Informal markets exist largely due to an unwillingness on the part of many consumers to pay the higher cost of modern formal processing and, particularly, of modern packaging. Although even poor consumers typically express a desire for higher food quality and safety, their buying practices reveal that their effective demand for these attributes is generally low. Another factor that drives the large role of informal markets is the fact that for many livestock products in LMICs, the market fails to distinguish different grades or standards of products, which removes the possibility of charging higher prices for higher grades and so disincentivizes formal processing.

Because the informal sector generally relies on simple labor-intensive technologies and handling practices, it represents a large and alternative set of development opportunities, particularly for employment. Such markets take advantage of low-cost labor in a context where capital

intensive supply chains are unlikely to be remunerative and the VC financing required may not be easily available. In a study of employment in small-scale dairy VCs in Ghana, Kenya and Bangladesh, Omore et al. (2004) found that the numbers of full-time jobs created for every 100 liters of milk handled daily ranged from 2-3 in the case of mobile milk traders to up to 10 in the case of small-scale processors. The study found that employment per 100 liters was much lower in modern milk processing, where the wages were not significantly higher. Investment in informal market actors is likely to be pro-poor in terms of both the actors themselves and the customers served.

## 2. TAKE A WHOLE VALUE CHAIN APPROACH

The principles and market systems approach to VC development outlined in Chapters 2 and 3 are equally relevant to the livestock sector. It's important to note, however, that livestock VCs are arguably more complex than many other agricultural commodities, due to the need to handle highly perishable products or live animals on the output side and to effectively deliver sometimes complex technologies on the input side. The dominance of smallholder producers and small-scale market actors amplifies that complexity.

In Chapter 1, VCs were defined as a set of linked activities that work to add value to a product. The value addition occurs when some attributes are added to the product, or it is transported and packaged to suit buyers. However, investing in the processing of a complex livestock product – say a high-end cheese – will not lead to any value addition if there is limited market demand for the product. In contrast, other attributes can increase the value of the product without significantly raising the cost.

For example, a VC for open-range, organic beef with little physical transformation can generate greater value for the farmer (and other VC actors) than a VC for highly processed beef sausage (IFAD, 2016). In the Somali livestock VC, value is created at multiple stages, such as by traders who assemble and transport live animals, and processors which convert low-value hides, skins and even bones to saleable products.

Links between VC actors are critical, but interventions can too easily focus on some subset of the VC while ignoring other parts. To avoid that, approaches have been developed to physically bring VC actors together for information sharing, joint learning and the creation of new links and business relationships. This allows development agencies such as IsDB to better understand those links and to design interventions that optimize their value.



(FAO, Omore et al. (2004))



Farmers' association for dairy production, Burkina Faso. The farmers also produce seed (sorghum) for themselves and for their members

### MECHANISMS TO FACILITATE VC DEVELOPMENT

Formal cooperatives are often seen as a reliable vehicle for collective action in livestock VCs, typified by dairy cooperatives, which have seen widespread success in North America, New Zealand, and India. One such success is the Uganda Crane Creameries Cooperative Union (UCCCU) in south-western Uganda, with more than 30,000 members organized into 138 primary cooperative societies. Established in 2005, in part with US\$ 72 million in financing from IsDB, it now collects and markets some 700,000 liters a day (Elepu, 2016).

However, the track record on cooperatives is mixed (see Chapters 2 and 7 for further discussion of challenges related to Farmer Organizations). In general, a more sustainable type of model is seen in a business-oriented group approach that operates more formally as a group enterprise, leading to both financial and social outcomes among members. There are different examples of such models emerging, including case study 2 (p57) of dairy business hubs.

Other public-private mechanisms can be employed to facilitate the natural development of VCs. Innovation

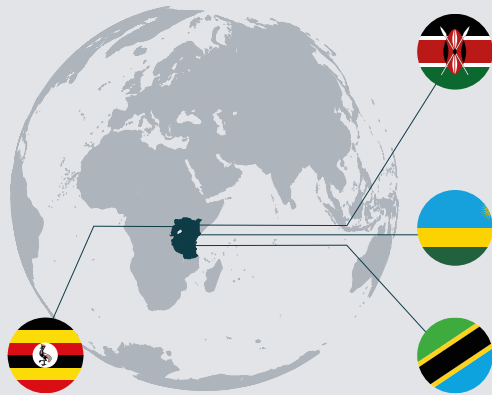
platforms (IPs) are one such mechanism. These are regular gatherings of actors of different types within a particular system. They provide forums for action and learning, where actors come together to address issues of mutual concern (Dror et al., 2015). When targeting VCs, in addition to joint learning and problem solving, IPs aim to create new business relationships. A similar approach is to employ 'business-to-business' (B2B) forums, such as those supported by the East Africa Trade and Investment Hub (EATIH) in several counties in northern Kenya. EATIH

**THE ILRI AND EAST AFRICA TRADE AND INVESTMENT HUB (EATIH) B2B FORUMS IN NORTHERN KENYA HAVE LED TO MORE THAN**

**13,000**

**SHEEP, GOATS AND CATTLE, WORTH SOME US\$ 2 MILLION, BEING TRADED.**

**CASE STUDY 2 | DAIRY HUBS IN EAST AFRICA**



In east Africa, most milk is produced on small-scale family farms, typically with three or fewer cows. Providing effective veterinary services and links to markets is challenging, especially for remote and scattered farmers, but is critical to ensure economic viability and to support the growth of these enterprises. One way to achieve this is through dairy hubs, an approach successfully implemented by the East Africa Dairy Development project (EADD) in Kenya, Uganda, Rwanda and Tanzania.

The hubs are farmer-owned and managed facilities, based around a milk bulking and chilling center where farmers deliver their daily milk. The hubs can effectively link small-scale farmers to private milk processors. Uniquely, instead of aiming to provide all services themselves as some cooperatives do, the hubs attract public and private service and input providers of feed, artificial insemination, animal health, extension and finance.

A recent study found that compared to farmers who did not use hubs, participating farmers produced 32% more milk per cow per day and their net returns were 45% higher. Another study concluded that participation in dairy hubs increased dairy revenues by an average of over US\$ 1,000 per year and significantly more if the hub focused exclusively on supplying processors (Ngeno, 2018).

meetings have led to more than 13,000 sheep, goats and cattle, worth some US\$ 2 million, being traded.

The concept of dairy hubs has been deployed by the Islamic Development Bank in supporting the development of the sector in its MCs. One key example is the Peri-urban Dairy Development Project in Burkina Faso. VCs of course also include the actors providing services and inputs to producers, and in the case of this Burkina Faso project, a wide range of integrated services for developing the milk VC are provided by dairy cooperatives to their members.

Indeed, relatively intensive dairy or commercial poultry systems will typically require a significant level of reliable inputs, and as these production systems are often geographically concentrated, the provision of services is more economically viable. In contrast, extensive dryland production systems suffer from low economic density, with long distances and poor infrastructure significantly increasing transaction and transport costs. Case study 3 (p59) on Sidai provides one example of how to overcome that. In remote settings, access to veterinary services is often badly needed but very poor. There is a key role here for public services and public-private partnerships. Public investment in vaccination programs and disease surveillance, sometimes through private providers, serves to build the capacity and sustainability of private services.



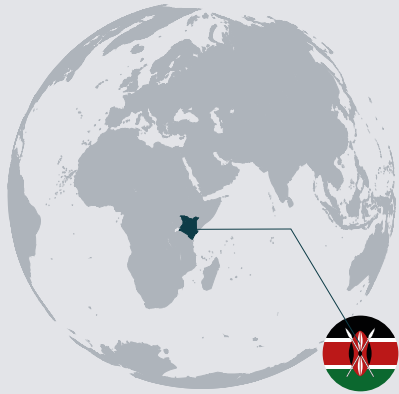
The iCow dairy platform is helping Kenyan farmers track the breeding cycles of their animals.

In the current digital age, ICT-based platforms to provide 'e-extension' services are expanding rapidly, including for livestock specifically. These are being catalyzed by increased access to mobile phones and cellular services by even poor farmers and by private investors who perceive a profitable business model for supplying such services. A useful example that may be replicable is the iCow dairy platform in Kenya, which provides a range of dairy extension messages and guidance through SMS messages, as well as tools to enable farmers to track the breeding cycles of their animals.

“ In many LMIC settings, small-scale livestock production and marketing is dependent on the availability of low-cost labor. ”



**CASE STUDY 3 | SIDAI'S FRANCHISE APPROACH TO PROVIDING INPUTS AND TRAINING**



Kenya's agricultural sector accounts for around one-quarter of national GDP and supports the livelihoods of 71% of the population. Demand for food is increasing, driven by a 2.5% annual population growth rate, but there remains a significant yield gap: maize

yields are around one third of potential, and a quarter of all livestock die each year. Contributory factors include poor quality inputs, lack of access to inputs in remote areas and knowledge gaps amongst farmers, livestock keepers and agro-input dealers.

To respond to these issues, Sidai Africa Limited was established in 2011 to supply high-quality livestock and crop inputs and training to farmers and pastoralists across Kenya. It operates through a network of branded, professionally staffed, franchised retail outlets, stockists and field staff. Sidai's 'last-mile' service delivery model reaches pastoralists and farmers in remote and under-served locations.

To date, Sidai has established 11 company stores, 87 franchisees, and has 120 employees and its own range of products. It sells to a further 1,500 stockists through its wholesale

business. Sidai currently reaches over 300,000 farmers, and 93% of farmers surveyed report they earn more from their crops/livestock since working with the organization.

In 2019, Sidai secured a US\$ 2.2 million investment from global agri-technology company, Devenish Nutrition. The investment will enable Sidai to further expand its distribution network, launch new products and reach more farmers.



Sidai currently reaches over 300,000 farmers in Kenya

**3. IDENTIFY AND MITIGATE POSSIBLE THREATS TO SUSTAINABILITY**

As explained in Chapter 1, IsDB's aim is to strive for sustainable VCs that embody the triple bottom line of economic, social and environmental benefits. This applies to livestock production systems and VCs as much as any other. Economic sustainability lies at the core, allowing private financial incentives to drive producer and market actor choices and investments. Environmental sustainability is increasingly important, given the growing attention to the carbon footprint and land use of livestock systems. Institutional or social factors also shape livestock system choices, for example in the context of gender roles which may impact production and marketing.

**ECONOMIC SUSTAINABILITY**

Economic sustainability may be the simplest to translate, since it is built on observable costs, market prices, shares, and trends. The creation of added value throughout a VC should contribute to its economic sustainability, since all VC actors would be expected to benefit. However, resource factor values and their trends also need to be considered very carefully.

In many LMIC settings, small-scale livestock production and marketing is dependent on the availability of low-cost labor. Studies have shown that ruminant production and

VCs exhibit very limited economies of scale when wages are low, because labor can be easily substituted for the capital investment in equipment needed for scaling up. Thus, milking cows by hand is still dominant across sub-Saharan Africa and South Asia. Systems and technologies that depend on low-cost factor values therefore need to be aware of urban economic growth that pulls labor from rural areas.

For smallholder producers in particular, the multi-functionality of livestock production directly affects economic sustainability by creating non-market and non-cash value to livestock keepers. These include the value of manure for fertilizer and the value of livestock as 'assets' that have an insurance function (as they can be readily sold in a financial emergency) and a financing function (as an inflation-proof store of wealth for planned expenditure, such as children's education or another enterprise).

A number of other product, market and natural resource factors can affect the economic sustainability of smallholder livestock production. Increased consumer awareness of and demand for greater food safety and product quality could eventually be a threat to smallholder livestock sustainability if not addressed. This may be a particular risk to smallholders without the financial means or required levels of economies of scale to invest in the means to comply with food safety and SPS measures.

Livestock-related interventions can directly benefit women's empowerment, livelihoods and incomes, as well as the nutritional status of their families



## INSTITUTIONAL SUSTAINABILITY

The capacity of key institutional actors for innovation, management, and investment also play important roles in the success or failure of livestock VC interventions and whether or not they are scaled up. Wanyoike and Baker (2013), for example, found that an unreliability on the part of government partners (e.g., slow decision making or delays in agreed co-investment) can threaten the success of livestock projects. They suggest that flexibility be built into livestock projects to reduce that risk. Such flexibility, for example, might take the form of establishing project mechanisms that allow farmers to make independent decisions and investments, while maintaining needed consultation with public actors.

Exit strategies are crucial to the long-term sustainability of a livestock intervention, in which the benefits of the intervention continue to accrue beyond the life of a project. Typically, promising livestock interventions are scaled up when new actors replicate an initial investment and/or intervention. Ideally, livestock project exit strategies are based on scaling by non-project actors and are linked to market opportunities. Market-driven business models generally have better chances of enabling interventions to endure and grow following the closure of the projects that introduced them.

**“ Greater emphasis on climate-smart livestock technologies will allow small-scale producers to increase their livestock productivity while lowering their greenhouse gas emissions 'intensity'. ”**

## ENVIRONMENTAL SUSTAINABILITY

Livestock production systems that generate significant waste, harming ecosystem services such as biodiversity and soil health, as well as generating significant amounts of greenhouse gases, are receiving increased attention in high-income countries. While these 'externalities' of livestock production systems are less of a concern now in lower-income countries, that is likely to change in future, especially as the developing world's livestock sectors rapidly grow to meet the demand for animal-source foods. Greater emphasis on climate-smart livestock technologies will allow small-scale producers to increase their livestock productivity while lowering their greenhouse gas emissions 'intensity', which is the volume of greenhouse gas generated per unit of product (meat, milk, eggs) produced.

## 4. USE LIVESTOCK VALUE CHAINS TO ENHANCE GENDER AND SOCIAL EQUITY

In most LMIC settings, women play key roles in livestock systems and VCs, often without a commensurate reward or role in decision making. Here we consider the implications of gender and livestock VCs from two perspectives: a) how women (and other vulnerable members or communities) can contribute to and advance livestock development and, conversely b) how livestock systems and their development can benefit women, contributing to their empowerment and to gender equity.

### USING GENDER TO ADVANCE LIVESTOCK DEVELOPMENT

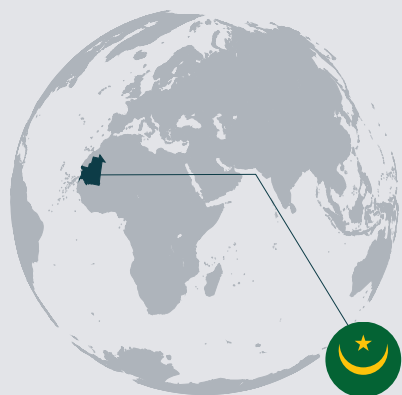
A gender strategy for a livestock VC project requires an understanding of the gendered roles in livestock VCs and at all levels. In developing as well as other countries, interactions among women and men and livestock production technologies and practices can be driven by social norms. For example, in some regions and

production systems, women and men will be expected to fulfill specific distinct roles in gathering feed and feeding livestock, in herding, in cleaning stalls, in milking, and in marketing livestock products and live animals.

These differences make delivery of extension information, such as on animal feeding or health, complicated as livestock production incentives differ among the individuals in a household. The design of technical and extension advice, materials and activities should thus take into consideration the different gendered roles and responsibilities for livestock production and marketing within households. Any technologies being promoted should be matched to the capacity of the responsible individuals.

The ways in which extension is provided must also match gender norms, for example by addressing women and men separately where meetings and conversations between women and men are restricted. Too often, extension meetings are attended largely by men even though

### CASE STUDY 4 | TIVISKI, AFRICA'S FIRST CAMEL DAIRY



In 1989, British-born engineer and long-time Mauritanian resident Nancy Abeiderrahmane noticed that the country relied largely on imported dairy products from Europe while having large herds of milk-producing animals, including around 1.5 million camels.

She obtained a loan from a French development organization to establish 'Tiviski', Africa's first camel dairy. The company began producing and selling fresh camel milk and other products made from camel milk in

Nouakchott, the capital and largest city in Mauritania. Among the initial problems to be overcome were that traditionally only the country's poorest camel herders sold their camel milk, the herders were widely scattered and many were nomadic or semi-nomadic, and the country's dairy sector was unorganized, with no formal veterinary or other support services available to the herders.

Despite this, Tiviski developed an effective milk collection system with collection centers at the dairy in Nouakchott and two other towns 200 and 300 kilometers away. The camel dairy managed to change the way herders viewed their animals,

encouraging them to see camels as a business opportunity as well as a way of life. It convinced local stores and consumers of the high quality and safety of its dairy products. It also established an NGO to provide camel herders with feed and veterinary and extension services, with the costs of these deducted from the regular milk payments made to the herders.

These multifaceted services and benefits to both members and the wider community ensured that Tiviski is sustainable and growing. Thirty years on, Tiviski has created more than 200 jobs and supports the livelihoods of more than 1,000 camel herder families.



Mauritania is home to over 1.5 million camels.



responsibility for the tasks being discussed lies with women. Including women as well as men in livestock development just makes good business sense, and can be promoted as such.

### USING LIVESTOCK TO FURTHER EQUALITY

Conversely, livestock development can be leveraged intentionally to further gender equality and the welfare of marginalized members of society. Indeed, gender equality is recognized by the United Nations' Sustainable Development Goals (SDG5) as a development objective of its own. Livestock-related interventions can directly benefit women's capacity, empowerment, livelihoods and incomes, as well as the nutritional status of their families. Some livestock-related cooperatives and self-help groups are established specifically to benefit women.

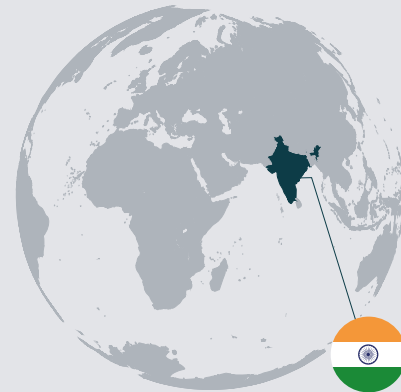
On the other hand, while dairy cooperative membership has long been seen as a means to link poor households with markets and services, women are generally not registered members and have little say in cooperative management. In Bihar, India, women-only dairy cooperative societies have been established to address this. (See case study 5).

Capacity development efforts even in established livestock systems can also benefit women. A retrospective study of the impacts of a large IFAD-supported smallholder dairy program in Kenya found that targeted and well-designed investment in capacity development and awareness can increase benefits to women even within already established smallholder dairy systems (Bonilla et al., 2018).

Small stock such as poultry are important to women in many rural settings, and a review of several such programs in Bangladesh by Fakhru and Jabbar (2005) found that small-scale poultry development can be particularly important to women not only by improving their incomes and livelihoods but also by increasing their social status, an important factor in greater empowerment in some cultures. There are also many livelihood opportunities for women in livestock product processing and marketing, particularly in informal markets due to the low levels of investment typically required and the low barriers to entry.

Livestock VC development can also create opportunities for young people, a growing demographic in sub-Saharan Africa. Some constraints to opportunities for youth, such as lack of access to land and finance, are similar to those for women, but others, such as the disempowering social norms that women can face, are very different. Some opportunities for addressing the finance challenge through Islamic financing tools are

### CASE STUDY 5 | A WOMEN-ONLY COOPERATIVE MEMBERSHIP IN BIHAR



Cooperatives have long been seen as an effective mechanism for linking smallholder dairy producers to milk markets and input providers, improving livestock productivity and incomes. The men in a community are typically the officially registered members of a dairy cooperative, and may accrue the benefits, even though women may contribute most of the labor in the dairy enterprise.

Women-only cooperatives have the potential to change this. A study in the Indian state of Bihar examined the income and employment impacts of membership in Women Dairy Cooperative Societies (WDCS) by comparing 80 member and 80 non-member households.

The study found that membership in a WDCS led to statistically significant differences in both mean monthly net income and levels of employment in member households compared to non-members. This was true in both cattle- and buffalo-keeping households. The study did not examine the exact causal mechanism for this result, but the results made clear that, compared to non-cooperative farmers, investing in women's dairy cooperatives increases benefits not just for women but for their entire households. (Kumari and Malhotra, 2016)





Small livestock such as poultry are important to women in many rural settings

presented in Chapter 6 of this book. The main challenge in livestock development for young people is leveraging development to create employment, particularly in VC services such as processing and selling local feeds and using mobile-phone systems for dispensing agricultural extension and market information.

### CHILD NUTRITION AND GENDER

Animal-source foods (ASFs) play a vital role in providing high-quality protein and essential micronutrients to undernourished people in LMICs, particularly children and women of maternal age. Carefully designed experimental studies have shown that even small amounts of ASFs provided to children regularly, such as an egg a day, can significantly benefit children's physical and cognitive development (Iannotti et al., 2017). Because women generally make dietary decisions in resource-poor households, diet quality is closely tied to gender. However, livestock production is often market-oriented, with the food products of the animals sold rather than consumed by households. The key is to find effective investments that can translate livestock keeping and production into increased ASF consumption.

**“Animal-source foods (ASFs) play a vital role in providing high-quality protein and essential micronutrients to undernourished people in LMICs, particularly children and women of maternal age.”**

A study of a livestock distribution and farmer training program in Zambia found that providing cattle or goats to households increased dietary diversity, an important measure of nutritional change. This was found to occur both directly and also by increasing household income, and importantly, the program also led to greater dietary diversity across the wider community (Jodlowski et al., 2016). Any livestock VC development program with a broad set of social objectives should feature mechanisms that increase access to, and consumption of, high-quality ASFs.

## 5. ENSURE A SUPPORTIVE ENVIRONMENT FOR LIVESTOCK VALUE CHAIN PERFORMANCE

Any supportive environment for livestock VCs necessarily relies on judicious policies, regulations and investments and thus is closely tied to the role of public sector. The private sector can and will likely invest in some supportive VC infrastructure and services where business opportunities exist to provide those, but that will occur only when the policy environment provides stability for such investment. Regional dimensions of the policies need to be recognized, and indeed these feature in the many development programs funded by IsDB, such as the Sahel and East Africa Dryland livestock project mentioned previously.

A starting point is to agree what livestock VC policy objectives are. In the case of livestock policies specifically, FAO (2019) suggests that these objectives should include: a) reduce rural poverty in general, with a specific focus on small-scale livestock producers, b) increase the sustainability and resilience of small-scale producers in the context of climate change, and c) empower small-scale livestock producers economically and politically in an inclusive manner.

Given the competing demands for scarce public resources, investment in agriculture remains low in Africa, in spite of the Malabo Declaration commitment by African nations to invest 10% of their public expenditure on agriculture. One could argue that since the livestock sector of developing countries is generally economically strong and growing, resources should be allocated to other areas, such as crops to feed Africa's fast-growing populations. However, many LMIC countries still rely heavily on imported

livestock products such as milk powder and frozen poultry, while their livestock industries and markets remain largely underdeveloped, operating in an atomized and informal manner. Further, without public support to smallholders in particular, livestock development will continue to be driven by private-sector investment, which on its own is unlikely to contribute sufficiently to rural development. Evidence should be used to prioritize public agricultural investments with the highest potential for rural growth and social as well as financial returns.

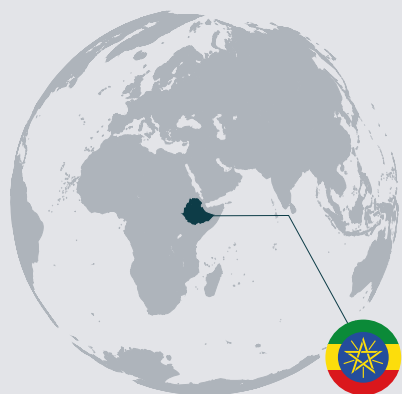
Types of investment that could be done through public-private partnerships include:

- Infrastructure for livestock markets such as holding/quarantine areas and delineated stock movement routes.
- Improved animal genetics, which requires long-term, multi-generational investment to achieve impact and scale.
- Effective data systems for livestock sector monitoring.
- Livestock market information systems, ideally linked to new ICT platforms.
- Support to access financing, including microfinance and emerging innovative forms of livestock insurance.
- Support to national and regional livestock organizations that can play important roles in VC projects.

It is encouraging to note that these integrated investments are reflected in many IsDB-funded projects at both country and regional levels. For instance, both the Peri-urban Dairy Project in Burkina Faso and the East Africa Dryland project in Uganda invest significantly in artificial insemination in



Upgrading livestock production in Mauritania

**CASE STUDY 6 | ETHIOPIA LIVESTOCK MASTER PLAN**

'Livestock master plans' identify and prioritize livestock development opportunities and strategies and use that knowledge to attract livestock sector investments from national finance ministries, development

agencies, international donor agencies and the private sector.

After achieving a 10% annual growth rate between 2004 and 2014, the Government of Ethiopia developed a Growth and Transformation Plan [II] 2015-2020 to become a middle-income country by 2025. The plan prioritized agriculture and livestock.

The Ethiopia Livestock Master Plan was based on modeling a 15-year livestock sector analysis of potential outcomes of investments in terms of increased production, the value added by technology and service investments, and policy scenarios.

The resulting plan comprised a five-year investment roadmap. The plan assessed the potential medium-term impacts of combined technology and policy interventions and informed

the Ethiopian government's Growth and Transformation Plan II livestock targets.

Since its launch in 2016, the plan has served as the basis for new funding and projects for the country's livestock sector. This includes a new World Bank loan of US\$ 170 million, new donor project financing of US\$ 75 million and new private sector investments of US\$ 200 million, totaling nearly half a billion dollars. The resulting higher livestock productivity and income levels are projected to lift more than 2.3 million Ethiopian livestock-keeping households out of poverty. Although it is too early to assess impacts of the Master Plan, some anecdotal evidence indicates the poultry sector is growing fast as a result of the support put forth in the plan.

**“ It is encouraging to note that these integrated investments are reflected in many IsDB-funded projects at both country and regional levels. ”**

order to rapidly improve the livestock breeds. Investments that should be viewed with skepticism include the establishment of disease-free zones and commodity-based disease control mechanisms with a view to building export markets. Although they may generate some foreign currency, these projects have generally been uneconomical and require long-term public support to be sustained.

In addition, adequately functioning public services are key. As Wanyoike and Baker (2013) pointed out, the main risk to the success of livestock projects is a lack of reliability in government partners. Regulatory policies should address easing restrictions on imports of key feed materials, animal genetics and veterinary drugs, along with other technologies such as for product processing. Policies that restrict the roles of trained community animal health workers should be reformed, given the evidence that these practitioners have a role to play in rural areas not well served by animal health services otherwise. In general,

regulations should allow the emergence of innovative private forms of service delivery (see case study 3 on Sidai) and facilitate the emergence of innovative forms of collective action and organizational development (such as the producer companies in India), which can better link smallholders to markets, services and financing.

The translation of lessons learned and best practices and policies identified from other countries should not be done in an ad hoc and disjointed manner. It is important to have an integrated livestock VC development strategy, which maps all the desired investments and policies in an overall 'game plan' (FAO, 2019). This should address the limitations of VC actors and partners through incentives or capacity development. In addition, the strategy should go beyond the core VCs of interest and also deal with the support functions and the enabling environment, all tied together by a common vision, ideally developed through a participatory process with stakeholders. An example of this sort of strategy can be seen in the recent development of Livestock Master Plans in Ethiopia, Tanzania, Uganda, Rwanda and India's state of Bihar. Case study 6 (above) describes the stakeholder consultations and modeling exercise that led to a comprehensive plan for the Ethiopian livestock sector, which is now being used as a blueprint for new livestock investment by the World Bank and private-sector players. The IsDB has engaged ILRI to help two MCs (Guinea and The Gambia) develop similar Livestock Master Plans.

## 6. LESSONS LEARNED

- Livestock marketing chains in LMICs are diverse and complex and involve many types of actors, most of whom generally are not formally recognized and regulated. While this presents governance challenges, it also presents employment and value-addition opportunities.
- Demand for better quality and safer livestock products is growing, creating compliance constraints for many smallholders. At the same time, demand for traditional products is likely to remain strong. New approaches are available to upgrade the quality of informal markets, and these should be used.
- Smallholder livestock systems experience high transaction costs and rely on low-quality and unreliable inputs and services. New organizational models such as business hubs and collective enterprises can reduce those constraints.
- New livestock interventions should consider their probable social and livelihood outcomes to prevent causing unintended harm to smallholders. In general, policy and decision-makers should be aware of the potential trade-offs and impacts among rural communities and for economic growth.
- National policies may choose to increase livestock product supply either by increasing the importation of ASFs, by investing in large-scale livestock production systems, or by growing small-scale livestock systems (or some combination of all three). Each of these has different implications for rural development and livelihoods, economic growth, and foreign currency balances.

## 7. CONCLUSION

Even while agricultural economies are generally shrinking as a share of national economic activity, livestock sectors are growing due to strong growth in demand for ASFs as consumer incomes rise. This presents livelihood opportunities and the possibility of an increased supply of nourishing ASFs to both the urban and rural poor. In most LMICs, smallholders will continue to play important roles in livestock production and small-scale enterprises will continue to deliver the bulk of livestock products and inputs. The overarching factor challenging in capturing these opportunities is the complexity of the production and market systems. This chapter has presented evidence and examples of different approaches to address those challenges and ensure that sustainable livelihoods continue to be created through the development of livestock VCs.

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