COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

<table>
<thead>
<tr>
<th>Item 3.1 of the Provisional Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE</td>
</tr>
<tr>
<td>Tenth Session</td>
</tr>
<tr>
<td>Rome, 27–29 June 2018</td>
</tr>
<tr>
<td>DRAFT FAO GUIDELINES ON DEVELOPING SUSTAINABLE VALUE CHAINS FOR SMALL-SCALE LIVESTOCK PRODUCERS</td>
</tr>
</tbody>
</table>
Developing sustainable value chains for small-scale livestock producers
# Table of Contents

I. Executive summary .......................................................................................................................... 5  
   A. Introduction ................................................................................................................................. 8  
   B. Why a sustainable value chain approach? .................................................................................. 9  
   C. Livestock markets and small-scale livestock producers ......................................................... 11  
      1. **Specific characteristics of the livestock market** ............................................................... 11  
      2. **Who are small-scale livestock producers?** .................................................................. 12  
      3. **Common issues related to livestock and associated value chains** .............................. 13  
   D. The SFVC framework ................................................................................................................ 15  
      1. **Definitions** ....................................................................................................................... 15  
      2. **The VC and its environment** ......................................................................................... 16  
      3. **Value chain networks and governance** ......................................................................... 18  
      4. **Value added** ..................................................................................................................... 19  
      5. **Sustainability of the VC** ............................................................................................... 20  
   E. The steps in value chain analysis and development .............................................................. 22  
   F. Potential and limitations .......................................................................................................... 24  

II. Part II. Putting the concept into practice ..................................................................................... 26  
   A. Introduction ............................................................................................................................... 26  
   B. Step 1. Preliminary assessment ............................................................................................... 27  
      1.1 **Programme objective and context** .............................................................................. 27  
      1.2 **Programme implementation** ....................................................................................... 28  
      1.3 **(Sub)sector characterization** ....................................................................................... 29  
   C. Step 2. Value Chain Selection ............................................................................................... 31  
   D. Step 3. Value Chain analysis ................................................................................................. 35  
      3.1 **End-market analysis** ...................................................................................................... 35  
      3.2 **Value chain mapping** ................................................................................................... 37  
      3.3 **Analysis of the value chain** ......................................................................................... 50  
   E. Step 4. Vision and Development Strategy ............................................................................. 77  
      4.1 **Vision and strategic objectives** .................................................................................... 77  
      4.2 **Development Strategy** .................................................................................................. 78  
   F. Step 5. Design and implementation ....................................................................................... 83  
      5.1 **Action plan** ..................................................................................................................... 83  
      5.2 **Partnerships in implementation** ................................................................................... 103  
   G. Step 6: Monitoring, Evaluation and Scaling-up ................................................................. 105  
   H. Phasing out .............................................................................................................................. 112  

III. Bibliography ................................................................................................................................. 114  

Annex 1. Non exhaustive list of actors to be considered within a Livestock Value Chain .............. 119  
Annex 2. List of selected tools for further VC analysis and development ...................................... 120
Annex 3. Key issues for value chain mapping and analysis ................................................................. 125
Annex 4. Examples of outcome and impact indicators for livestock value chain development projects .................................................................................................................................. 131
I. Executive summary

In both developing and developed countries, small-scale livestock producers are important actors in food production, human health and landscape management. But they face a number of challenges such as restricted access to markets and related services, environmental constraints, and limited capacities that hamper their productivity and competitiveness vis-à-vis their larger counterparts. Some of those issues are specific to livestock, and represent important constraints in the development of most livestock value chains.

The Sustainable Food Value Chain (SFVC) framework is a market-driven approach developed by the Food and Agriculture Organization of the United Nations (FAO) to provide guidance in development thinking and intervention design. The guidelines provided in the framework represent a practical development tool. They focus on small-scale livestock producers and are intended for a target audience of project design teams, national programme managers and policy makers. Three key objectives are considered: (i) reducing rural poverty in general, with a specific reference to small-scale livestock producers; (ii) increasing the sustainability and resilience of small-scale producers in a changing environment; and (iii) empowering small-scale livestock producers inclusively, both in economic and political terms.

The concept and context

The guidelines consider the following definition of livestock-specific food value chains:

*The full range of people and organisations and their coordinated value-adding activities, which make it possible to produce and transform livestock products that are sold to final consumers, in a manner that is profitable throughout, has broad-based benefits for society and shows neutral or positive impacts on natural resources. It fully considers the interaction between its components and the physical, social, and economic enabling environment.*

Some conceptual elements must be considered within the SFVC framework. Its market-led approach integrates the multifaceted concepts of value-added and sustainability. Value added can be defined as the difference between the non-labour costs of producing a product and how much consumers are willing to pay for it, adjusted for externalities (positive or negative outcomes for society and the environment). Value added is shared between different stakeholders in the form of salaries or wages for employees, net profits for enterprises, tax revenues for the government, and the consumer surplus (the difference between the market price and what the consumers would be willing to pay). At the same time, sustainability must be considered in its economic, social and environmental dimensions. In the context of value chain analysis and development, it is of paramount importance to characterize how a value chain performs in all three of these dimensions, as well as to understand interactions between stakeholders, their activities and the enabling environment, and what drive their behaviour and the governance of the value chain. This will make it possible to identify root problems, leverage opportunities to upgrade the targeted VC, and develop, in accord with value chain stakeholders, a vision and development strategy supported by appropriate action plans.

Despite the diversity of livestock systems in the world, a number of issues specific to livestock value chains should be considered because they may impact directly on the sustainability of the VCs as well as their governance. First, livestock often have multiple functions, ranging from the production of food, hides, skins and dung, to services such as draught power, savings and social prestige, which may drive the behaviour of small producers. Furthermore, small-scale livestock producers are often involved in a network of different value chains. This means that livestock VC analysis needs to consider how various
functions and value chains interact. Animal health and food safety represents another specific challenge: animals generally require veterinary care to maintain production levels and avoid unwanted losses, and animal diseases can potentially be transmitted to humans throughout the elements of the value chain. Livestock value chains may also involve specific activities and processes, e.g. fattening or slaughtering animals and refrigerating milk products. Finally, different cross-cutting issues may require a particular focus in VCs, including the positive and negative interactions between livestock and their environment, the specific roles of women and children in livestock management, quality along the food chain (e.g. taste, appearance, nutritional properties, safety, food losses), and animal welfare.

**Putting the concept into practice**

Value chain development may be viewed as a dynamic process with six different steps. Continuous monitoring enables interventions to be adjusted as necessary as they are scaled up.

1. **Preliminary assessment**
   The first step in a value chain programme is to understand the larger context in which it is being implemented. This involves identifying the programme objective and immediate context, framing the starting point and overall livestock development strategy, and the programme’s *modus operandi* and implementation (instruments, beneficiaries, strategic partners, timeline and resources). Characteristics of the livestock sector should then be mapped out in order to determine market opportunities and potential, the demand and supply situation, the subsectors and production systems involved, economic importance and trade, actors present and challenges faced. Based on this preliminary assessment, the objective, scope and parameters of the specific value chain/s intervention can be defined together with strategic partners.

2. **Value chain selection**
   The choice of the specific value chain to be analysed within the (sub)sector should, naturally, be based on the specific programme framework, which should consider the market and its growth opportunities, the importance of the sector and its development impact, and the feasibility of change as well as other strategic factors. Potential value chains can be scored and ranked according to a set of criteria reflecting the objectives and scope of the programme. This criteria will consider market and growth opportunities, relevance of the sector and its development impact, as well as strategic factors and feasibility of change.

3. **Value chain analysis**
   Value chain analysis allows practitioners to understand the market systems that are part of the value chain, the openings they provide and the market failures that affect competitiveness and sustainable, inclusive growth. First, a comprehensive end-market analysis is critical to understanding the market opportunities and dynamics, and thus gauge the potential for growth. Then the value chain should be mapped, considering: the core value chain, which includes the actors involved in production, aggregation, processing and distribution; the extended value chain and supporting functions (provision of knowledge and skills, research and development services, feed, veterinary and financial services, etc.); and the enabling environment, which comprises organizations and the formal and informal rules and regulations that govern the way in which business is transacted. Once the value chain is mapped, a set of analytical tools can be used to better understand how the value chain is performing in term of incentives and capacities, governance, economics, and sustainability. These tools include among others quantitative analysis of the volume value added, costs, profits and margin across the value chain or market system analysis. It can be completed with specific approaches such as food loss evaluation or life cycle assessment, for instance. A strategic analysis should identify internal strengths and weaknesses of the chain, and the external opportunities and threats which influence its competitive advantage and the potential for sustainable, inclusive growth. It should also capture the dynamics of the value chain, and factors that influence it.
4. Vision and development strategy

Once the value chain analysis is complete, key stakeholders and partners should formulate and agree on a common vision, corresponding to the state and objectives the value chain should achieve at a specific point in the future. The objectives should be as concrete and precise as possible, and eventually provide quantification in term of targets. The development strategy, on the other hand, defines the “game plan” setting out how the various value chain actors, facilitated by the programme, are to achieve the objectives set in the vision, and address the root causes of why value chain actors and partners do not take advantage of market opportunities (lack of incentives), or cannot do so (lack of capacities).

5. Design and implementation

The action plan details how the strategy is to be implemented, breaking down its various components in terms of what, how, when, who and where, and including interventions in the core value chain support markets and enabling environment. Public-private partnerships are expected to be central to value chain development strategy and implementation, and it is very important that the roles, responsibilities and ownerships of all partners are clearly defined before implementation.

6. Monitoring, evaluation and scaling up

A monitoring and evaluation system need to be in place to track project steering, measure project effectiveness and impact, using appropriate outcome and impact indicators. Scaling up strategy, covering both geographical expansion as well as institutionalization and strengthening of the project, should be integrated in the overall development strategy.

Project should also have a clear phasing-out strategy to ensure that interventions are sustainable and that the system continues to respond, and adapt, to changing market, social and environmental conditions.

By integrating the concepts of value added and the three dimensions of sustainability, the SFVC approach can not only address questions concerning the competitiveness, inclusion and empowerment of small-scale producers, but potentially cover many of the cross-cutting issues that are increasingly embedded in development projects. SFVC is designed to be flexible and should be used together with other tools and approaches aimed at resolving specific transversal issues. Livestock specificities must, however, be considered at every stage of a value chain development programme. SFVC can also be used to complement national development strategies and programmes, potentially assuming a key role in the development of the livestock sector and the reduction of hunger and poverty.
Part I. Context and concept

A. Introduction

In many food systems, small-scale livestock producers are major stakeholders in food production and, with it, in human health and landscape management in both developing and developed countries. Regardless of the scale, livestock raising is an economic activity, and the question of how producers are connected to the market should be one of major concern to those seeking to help the sector develop. This is all the more important given the growing demand, both current and projected, for livestock products in developing countries.

Improving linkages between small-scale producers and the market corresponds to several objectives pursued by FAO, including making agricultural and food systems more inclusive and efficient, increasing the productivity and sustainability of agriculture, reducing rural poverty, and eliminating hunger and malnutrition. Those objectives reflect several of the United Nations’ Sustainable Development Goals (SDGs), such as SDG1 (End poverty in all its forms everywhere), SDG2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), SDG8 (Promote inclusive and sustainable economic growth, employment and decent work for all) and SDG12 (Ensure sustainable consumption and production patterns).

These guidelines are intended to serve as a development tool for designing interventions on a participatory basis, and to develop or improve value chains in a sustainable manner. Three key objectives are proposed: (i) reducing rural poverty in general, with a specific focus on small-scale livestock producers; (ii) increasing the sustainability and resilience of small-scale producers in a context of environmental and climate change; and (iii) empowering small-scale livestock producers economically and politically, in an inclusive manner.

In contrast to other value chains tools, guidelines and handbooks, SFVC’s focus is on the problems of small-scale livestock producers within the value chain framework.

These guidelines are intended for policy makers in ministries, national programme managers, project design teams, and partners interested in value chain development. The ultimate beneficiaries should, however, not only be small-scale producers, but also the different players involved at different stages in the value chains as intermediaries or supporting actors.
B. Why a sustainable value chain approach?

These guidelines follow the Sustainable Food Value Chain Development (SFVCD) approach, which is driven by several principles to be used in upgrading a food sector. These principles may be summarized as follows:

- Measure of performance: the three dimensions of sustainability, namely economic, social and environmental must be considered holistically, including synergies and trade-offs.
- Understanding performance: the approach takes a holistic perspective, meaning that the systems considered are interconnected and dynamic, governance-centred, and market-driven.
- Improving performance: translating value chain analysis into effective interventions requires a clear vision and upgrading strategy, but the process must also be scalable and multilateral.

To better understand how the SFVCD approach can help to achieve these objectives, it may be useful to look first at the main opportunities and challenges facing small-scale livestock producers.

As regards opportunities, the SFVCD market-driven approach appears relevant given the expected growth of the livestock sector, both in terms of quantity and quality, to meet growing demand. It is recognised that this trend represents a major opportunity for improving the livelihoods of small-scale producers.

As regards challenges, it is clear that growing environmental constraints, poor access to markets and related services, and limited capacities may hamper the productivity and competitiveness of small-scale livestock producers vis-à-vis their larger counterparts. For small-scale producers, access to market is a key element in securing better livelihoods: in fact, there is often a strong relation between distance to market and poverty incidence among rural populations (FAO 2012). In their market dealings, small-scale producers are often handicapped by low-quality inputs such as feed or veterinary drugs, poor services and expertise, high transaction costs, low sanitary standards and limited bargaining power with traders and intermediaries (Markelova et al., 2009; FAO, 2012). Problems in linking products to markets also stem from a lack of organization and governance, or absence of a political framework and appropriate infrastructure (McDermott et al., 2010). Social norms is an important aspect to be considered, and for instance, women may face even greater than men constraints here because they have more limited access than men to productive resources, technology, information and services. On the whole, livestock sector development often lacks a dedicated policy framework, due in part to the fact that animal husbandry tends to be considered as a secondary component of smallholder agriculture (FAO 2012).

The development paradigm and theory of change behind the SFVCD suppose that the structure of the system (i.e. elements of the value chain, their interlinkage, and enabling environment) generate the incentives and capacities, which determine the conduct of the actors, which in turn determine the performance of the value chains. This performance on its side may influence the structure the system as well as the conduct of the actors, creating a feedback loop. With the aim to reduce rural poverty and increasing the sustainability and resilience of small-scale livestock producers, while empowering them, different loops, focusing either on investment, multiplier effect, or social and environmental progress can be considered (Figure 1). It can be considered that the development of sustainable value chain will benefit to small producers through the return on assets, for those developing their activities as
commercial farmers (investment loop). The sustainable value chain development paradigm involves, however, the creation of decent job opportunities throughout the chain (multiplier loop), as input supplier or downstream along the food value chain. As an example, it is likely that the upgrading of production through the use of new inputs and technologies, such as feed, drug or artificial insemination will require adequate service provision and involve the creation of new jobs along the value chain. Finally, as the value chain becomes more sustainable, in terms of economic, environmental and social sustainability, tax revenues may contribute to the improvement of the enabling environment through the development of public services, such as education, roads and infrastructure, and public extension services (progress loop) that need to benefit all members of communities.

**Figure 1. Theory of change and sustainable value chain development paradigm (adapted from FAO, 2014)**

Besides the economic aspect, the other pillars of sustainability – the environmental and social dimensions – must be considered in the development of the livestock sector. Future increased competition for resources (land, water, etc.) may have strong impact on livestock production systems, including those involving small-scale producers (McDermott *et al.*, 2010). Livestock production is likely to be deeply affected by climate change, especially in sub-Saharan Africa and South Asia, which already have some of the highest rates of poverty and food insecurity (Vermeulen *et al.*, 2014). For instance, it is expected that the growing period for crops in arid and semi-arid rangelands will diminish by 20 percent over the next few decades (Thornton *et al.*, 2008). Finally, socio-cultural changes may affect consumption of livestock products (Thornton, 2010). The volume of livestock product under organic or other quality sign certification, although still relatively small, has undergone substantial increase over the last years (McMorran *et al.*, 2015, FiBL/IFOAM 2018). In Europe for instance, an increasing interest in the patrimonial value of livestock (e.g. in specific native breeds) can be used to add value to local products (Gandini and Villa, 2003). Furthermore, increased ethical concern about the use of livestock could lead to diminished consumption of animal products, but it could also reward production systems that take animal welfare into account.
As a result, the specific elements characterizing livestock production systems (multifunctionality, input and output provision, health and quality, social equity, etc.) underline the need to analyse value chains in a holistic manner, i.e. considering not only the supply chain itself, but also its broad environment, its dynamics and its connections to other systems. It is also important to understand how the specificities of livestock production systems require the SFVCD approach to be adapted in terms of issues to be considered or tools to be used (carbon emission appraisal, SWOT analysis, end-market analysis, VC mapping, public-private partnerships, etc.).

C. Livestock markets and small-scale livestock producers

1. Specific characteristics of the livestock market

The market is a major driver of livelihoods, and improved market access has proved to be a powerful catalyst for poverty alleviation in transition economies (FAO, 2012). This is especially true for the livestock sector, as growth in demand in developing countries in the 2007-2030 period is projected at 2.2 percent for meat and 2.1 percent for milk (Alexandratos and Bruinsma, 2012). In those countries, characterized by increasing urbanization and incomes, higher demand for livestock products is expected to be accompanied by increased preference for quality products as average consumer incomes rise (McDermott et al. 2010). In developed countries, while overall consumption has stabilized over the last years, greater demand is projected for more sustainable products (Thornton 2010).

Livestock market are characterized by a number of features, some peculiar to livestock in general, others related to specific commodities (Kagetile et al., 1987). At the production level, livestock systems are characterized by production cycles that are often long and linked to specific physiological cycles or feed availability in complex ways (Rich et al., 2009). Livestock marketing is an important component of small-scale producers risk management strategy, and in some case is driven more by income needs than by price movements. The two main form of commercialization are either live animals, or a diversity of livestock products (mostly meat and milk). For instance, if worldwide, live animals represented in 2016 around 10% of export trade of animal products in value, this share increased to 52% in West Africa (ITC, 2017). These two modalities raised different challenges during transport, such as, for livestock products, storage and refrigeration, or for live animals, management of feed and zoonotic diseases. Livestock marketing chains may be long, both in term of distance and in number levels of traders, transaction and processing (depending on the final product), which therefore involves a variety of employment-creating services and inputs, as well as potential transaction costs (Rich et al., 2009). At the end of the supply chain, livestock products are purchased in a variety of outlets and in different retail form (World Bank, 2014). These specificities need to be carefully considered as they may involve numerous market failures, including high transaction costs, price volatility, information asymmetries, lack of organization capacities, regulatory failures, or unbalanced market power (Rich et al., 2009).

Animal products are an important source of protein, providing a wealth of micronutrients and playing a key role in human nutrition and health. Compared with crops, livestock are usually more expensive, and increased consumption of animal-source food (ASF) is therefore tightly linked to income growth. Consumption of ASF is also strongly related to socio-cultural attitudes. Growing ethical concern about
animal welfare and the environment is expected to affect consumption in developed countries (Thornton 2010), while religious aspects (restrictions, festivals, etc.) can strongly affect general or seasonal demand for specific commodities.

Quality in all its aspects (taste, food safety, health, service) is of paramount importance when considering the livestock market. This is in part because of the socio-cultural importance of livestock products, as tastes for specific products may change over time and places, but also because bad-quality ASF can harm human health, and because of the difficulties in product evaluation. Questions involving proper storage and/or biosafety standards should therefore be taken into account.

Finally, it is important to consider the livestock market at different scales (local, national, international). In this connection, it should be underlined that international trade in live animals and animal products is expanding, from 4 percent in volume terms in the 1980s, to 12 percent in 2013 (Guyomard et al., 2013). Pitted against developed and emergent economies such as Brazil or India, most developing country producers may face competitive disadvantages both at home and abroad (FAO, 2012). Their limited capacities and/or higher unit costs, together with higher sanitary standards for exports, may in fact prevent them not only from capturing the benefits of growing domestic demand but also from moving into export markets. This holds especially true for small-scale operators.

2. Who are small-scale livestock producers?

It is not easy to define just who the world’s small-scale livestock producers are. For various aspects need to be considered, such as size (land or livestock numbers), poverty, productivity, production systems and decision-making processes. Such features are, broadly speaking, interconnected, but differ across countries, production systems and agro-ecological zones (FAO, 2017). For the purpose of these guideline, small-scale producers are broadly defined as livestock farmers with limited resource endowments relative to others in the sector. Pastoralists, for example, are to be considered as small-scale livestock producers since their sustainability is constrained by limited resources.

It should be noted that in the context of value chains, small-scale livestock producers vary in terms of species raised, commodities produced, production systems operated and capacities possessed. Among livestock producers, species are a major factor of differentiation. They are highly dependent on the local environment, with some species specifically adapted to extreme conditions (camelids, yaks, etc.), but they can also reflect socio-cultural beliefs (e.g. religious restrictions). The diversity of products (meat, milk, eggs, hides, dung, etc.) also depends on the species involved.

The kind of products (their transportability, value, sanitary requirements) and who buys them are obviously strong determinants in organizing value chains. Aspects to be considered include if and how the products are aggregated, if they require some form of transformation (including slaughtering), and how they are distributed to consumers. The complexity of a value chain can therefore vary from direct sale from producers to consumer, to multiple-step chains involving many intermediaries and targeting international markets.

Livestock keepers also differ according to their production system, with a classical separation between pastoral systems on the one hand and mixed/backyard systems on the other (Gerber et al., 2013). While
pastoralist rely solely on livestock products for their livelihood, in backyard (mostly chickens and pigs) and mixed crop-livestock (often ruminants) systems, the contribution of livestock to household income (see Box 1) may be secondary compared with their importance in terms of household food security, savings, re-use of residues, draught power and dung production. Indeed, the rationale for keeping livestock might not be linked directly to economic considerations. For instance, the selling of small livestock may be more related to the payment of annual school fee than to market price. Even though livestock may provide a significant part of household income, in mixed/backyard systems value added to livestock products may often be strongly linked to other activities and should therefore not be considered independently. In a development perspective, the interest of livestock keepers in interacting with the market has to be assessed before implementing a value chain approach.

3. Common issues related to livestock and associated value chains

Despite their many differences, there are a number of issues that are shared by most, if not all, of the world’s small-scale livestock producers (Figure 2). These may, in varying degrees, affect the sustainability of farming systems and related value chains.

**Figure 2. Issues affecting small-scale livestock producers and value chains**

In term of production, it is important to remember that domestic animals continuously require inputs and produce outputs (milk, dung, etc.). Small-scale producers are highly dependent on local or external feed resources, and in some case feed provision can constitute a separate value chain. This has implications in terms of workload and livestock products supply (plus organization and interaction with value chain intermediaries).
Among other inputs, the question of the reproduction and use of breeding stock can arise in connection with the management of genetic resources. The relevance of this issue is, however, dependent on the production system involved. Some small-scale producers do not have specific reproduction practices, while others rely on artificial insemination or stud animals.

While some smallholder production systems can be considered as landless, or backyard, operations, all farmers (indirectly in the case of landless ones) rely on land and related resources such as water, either for pasture or feed provision. The issue is of special concern to pastoralists, whose livelihoods rely on the mobility of animals. This has consequences in term of land tenure and access to markets and services.

Multifunctionality is another characteristic of livestock production systems, especially those involving small-scale producers. This is important in terms of sustainability since multifunctionality may be considered a key component of resilience. Individual functions to be considered may of course differ from one system to another. But in the context of value chain intervention, the way a given action may interfere with other livestock functions must be carefully weighted. For instance, when livestock are kept to ensure a farmer’s subsistence, they serve as a short- to long-term form of savings to meet specific expenses. Switching to a business model requires smallholders to change their behaviour (determined by their capacities and the incentives provided by the system), which, in this case, implies finding alternative forms of financing (see Box 1).

Animal health is a major issue common to all livestock value chains because veterinary care is generally required to maintain production levels and avoid losses, and to avoid any transmission of animal diseases to humans – as has occurred, sometimes at global scale, over the last decades. Marketing chains provide multiple opportunities for the transmission of pathogens, starting with contact between domestic and wild animals at one end of the chain, and ending with the consumption of contaminated animal products at the other (FAO 2011b).

While the different aspects of food chain quality (taste, nutritional properties, safety, food losses, etc.) may not be exclusive to livestock products, they can all have consequences up and down the livestock chain. For instance, the fattening, transport (live animals, carcasses, products, etc.), eventual slaughtering, transformation and conservation of animal products impact strongly on their quality (Hocquette et al., 2005). In developing countries, a reduction in food losses could have a strong impact on small-scale producers’ livelihoods (FAO 2011c). In order to ensure quality, livestock products may require specific processing and infrastructure (fattening, abattoirs, milk tanks, dairy plants, tanneries, etc.) which can be crucial elements in the value chains considered, and involve actors who may be essential in the governance of the livestock chains.

Especially in developed countries, animal welfare is a matter of growing concern, often influencing consumer choice and prompting public debate on standards and labelling. The cultural importance of animals, included among livestock ecosystem services, may also be considered at some point.

Finally, women, children and specific ethnic groups may have different roles and responsibilities. This means that the parts played by women and men in the different nodes of the chain should be analysed,
as should the participation of children and young people. Such an exercise should clarify how the various actors participate and benefit from the chain, their access to, and control over, resources and services, as well as their involvement in decision-making. Identifying gender inequalities helps projects and programmes address these, enhancing the sustainability and inclusiveness of a livestock value chain while improving its performance.

There are also a series of factors that can serve to differentiate small-scale producers in terms of social determinants (gender, age, education, etc.), local conditions (climate, infrastructure, etc.) and the general regulatory framework (legal, farmers’ organization, etc.). In Vietnam, Herold et al. (2010) showed, for instance, how distance to market can be another factor of differentiation and organization in pig farming. Furthermore, the socio-cultural role of the various livestock species may differ depending on the country and society. In some places, women are traditionally in charge of raising livestock (poultry, small ruminants and dairy farming), with the support of young family members. This may represent both a major challenge and a significant opportunity of empowerment since women and young people often have limited access to resources, information and services, and are less involved in decision-making than men (FAO 2011a).

D. The SFVC framework

1. Definitions

Adapting the definition applied by Kaplinsky and Morris (2002) to the specific field of food products, Neven (FAO, 2014) provided the following definition of a Sustainable Food Value Chain (SFVC):

“The full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society and does not permanently deplete natural resources.”

In these guidelines, we limit the scope to livestock, specifically targeting small-scale producers. Our definition of a livestock-specific food value chain could therefore be:

“The full range of people and organisations and their coordinated value-adding activities that produce and transform livestock products that are sold to final consumers in a manner that is profitable throughout, has broad-based benefits for society and shows neutral or positive impacts on natural resources. It fully considers the interaction between its components, and the physical, social, and economic enabling environment.”

VC people and organisations conduct a series of core activities (where they have the ownership of the product), namely production, collection/aggregation, processing, and distribution (wholesale and retail). These activities are completed by extended services which support or constraint the flow of products, such as marketing, inspection, training, etc. A comprehension of the governance among actors, in the sense of the relationships among people, organizations and institutions (which will be further be referred as actors) that operate in, influence or enforce the value chain is essential in order to measure, understand and improve VC performance. This encompasses all types and levels of
coordination mechanisms (formal contractual agreements, socio-cultural norms, etc.) among all actors and all drivers shaping these mechanisms. In this regard, understanding and orienting the behaviour of actors towards higher coordination and sustainability is a fundamental part of SFVC development. The SFVC approach is market-driven in the broad sense, i.e. it seeks potential opportunities in terms of market and value chain upgrade, identifying thus critical issues and potential market failures to be overcome.

Value added is central to the concept of VCs as the activities carried out by broadly coordinated VC actors generate value. Indeed, the main objective of VCs is to efficiently capture value generated at the end-market in order to engender profits and outcomes for all stakeholders involved, from production to consumption. Aspects of social and environmental impacts should be considered in the analysis of value addition by examining the distribution of the value added. Such analysis should include minority and gender aspects, since gender equity and economic growth can be mutually reinforcing. Conversely, gender inequalities tend to increase costs and inefficiencies along the chain. Negative and positive externalities of a VC (e.g. environmental footprint, potential outbreak risks) should also be investigated.

The SFVC approach takes account of social, economic and environmental sustainability in a VC. This means that SFVCs should be profitable throughout, offer society broad-based benefits and have a positive or neutral impact on the environment. In a project context, this is achievable by integrating the multidimensional concepts of sustainability into the strategic design and implementation of interventions, into the evaluation and measurement of performance of the value chain, and in the project’s monitoring, follow-up and exit strategies. It is therefore important to consider eventual trade-offs between the various aspects involved, while also bearing in mind that they can be a source of value creation (e.g. marketing actions based on the ecosystem services provided to differentiate a product in the market).

It is particularly important that there should exist an enabling environment encompassing economic, legal, socio-cultural, logistic and ethical aspects, and covering different scales (local, regional, national and global), and interactions deriving from the multifunctionality of livestock. As discussed by Webber and Labaste (2010), VCs include vertical as well as horizontal linkages to other VCs that provide intermediate goods and services in the food system. It can, to that extent, be considered that a given VC is often part of a complex network of diverse VCs relating to the different products provided to small-scale producers. These various VCs must therefore be considered in the SFVC framework.

Neven (FAO, 2014) notes that many practitioners view value chains from a development perspective – in terms of market systems, inclusive business models, localized agro-food systems, etc. However, the SFVC approach can be embedded within the broad concept of a food system, comprising all processes and infrastructures required to feed a population, and therefore including all food VCs that affect a selected set of food markets (e.g. those in a given country).

2. The VC and its environment

If we focus on the range of activities involved in bringing a product from producer to consumer, a VC can be shaped as in Figure 3.

At different steps of the process, different functions are handled by various stakeholders. Given our focus on small-scale producers, one important point to consider is the interactions (information, governance) between production and the other functions (aggregation, processing, distribution, etc.) of the value chain.
Service and input providers are important stakeholders in most livestock VCs, given the dependency of livestock raisers on inputs such as loans, feed, drugs or reproductive materials. However, inputs and services are also required at every different step in the value chain. This gives input and service providers a key role in chains that support the value-creation process. If, at some stage, input and service providers become owners of the product, they become integrated in the core value chain. Provision of inputs and services can therefore be considered either as part of the core value chain or as support services.

The enabling environment, at national and global level, must be taken into account in the SFVC approach. First, because small-scale livestock producers are often largely dependent on their physical environment, especially pastoralists, whose relation to land is fundamental. Second, because distance from producer to consumer, as well as the existence or absence of logistics infrastructure (roads,
markets, trains, etc.), has a major impact on a VC, both in terms of intermediate actions required (aggregation and distribution), and of value added. Finally, the enabling environment also involves other aspects such as national legislation, policies and programmes, as well as organizational, or socio-cultural considerations which are essential for understanding the value chain and its performance.

3. Value chain networks and governance

Given the multifunctionality of livestock, small-scale producers may be involved in different VCs, either related to a diversification of markets/consumers (for instance development of short supply chains targeting local consumers), or commodities (e.g. meat/milk, or crop/livestock). A dairy cattle producer can potentially sell milk, meat, and manure, which involves at least one VC per product. The number of VCs may also increase when considering the different distribution channels for the products, as well as crop production, which is often the main product in mixed systems.

A given stakeholder may also have different roles (Figure 4), maintaining complex relationships with other actors. Through vertical integration, the same stakeholders may, for instance, collect live animals and supply veterinary drugs at the same time. Some producers may also sell reproducing animals. The kind of interaction existing between stakeholders, as well as the common drives which bring a set of people and organizations into a specific value chain must be considered in the analysis of governance and intervention design. Relationships and the rules behind those relationships need to be assessed to understand the conducts of actors, what does those conduct bring in term of inefficiencies, and what incentives may change these conducts.

Finally, considering the seasonal nature of livestock production and consumption, the share of production at a particular point in time may not provide full information about the VC involved (Kaplinsky and Morris 2002). For instance, in Muslim countries, religious festivals featuring animal sacrifice have clear impact on VCs directly in terms of suddenly increased demand for meat or live animals for sale to consumers (Strasser et al., 2013).
Considering all elements of a value chain network is a very complex task. It is therefore recommended that only the most significant VC(s) are selected for any specific objective (IFAD 2016a). On the other hand, it is important to consider the different linkages (horizontal and vertical) within the network as a change within a given chain can have an impact on other VCs, e.g. on the revenues and activities of producers in those chains.

Given the complexity of VC development, it is often approached on a “one-chain-at-a-time” basis. A proper analysis thus requires first taking a broad look at all the VCs that involve small-scale producers, then carefully selecting the particular VC that deserves to be prioritized for development and improvement, considering criteria such as market potential and sustainability (see below).

4. Value added

Value addition is central to the VC approach. From producer to consumer, the product is intended to take on value during processing, storing and transporting. For value chain stakeholders, the value added will be defined as the difference between the non-labour costs of producing the product and the consumer’s willingness to pay for it, adjusted for externalities (FAO, 2014).

The value added depicted in Figure 5 illustrates how the value created is shared between different stakeholders: salaries or income for employees, net profits for enterprises, tax revenues for the government and consumer surplus (which considers the difference between the market price and what consumers are willing to pay for the product). This creation of value is regarded as the economic sustainability of the VC, while the social dimension will look at how this value is shared among categories of stakeholders and does not generate unacceptable outcomes for society (e.g. animal mistreatment). Finally, the environmental dimension lies in both negative (e.g. pollution) and positive (e.g. ecosystem services) externalities which have to be factored into the value added for society.
Development of sustainable value chains and adequate distribution of value added should benefit small-scale producers who decide to become commercial farmers by giving them a return on their assets. But, as noted, it is unlikely that the majority of small-scale producers will do so. It can be expected, however, that as productivity increases, less labour will be required for the same amount of food produced. And since a minority (perhaps 30 percent) of small-scale producers are likely to become entrepreneurs, many smallholders will have to find jobs outside farming (FAO, 2014; IFAD, 2016a). But the sustainable value chain development paradigm involves the creation of decent job opportunities throughout the chain, e.g. supplying inputs or working downstream along the food VC. It is likely, for example, that upgrading production with new inputs and technologies will necessitate associated services, thus creating new employment along the VC. At the same time it has to be recognised that novel technologies and systems can also result in the exclusion of some people from the chain, particularly women smallholders. Consequently, new technologies, when introduced, need to be made accessible to small-scale women producers by addressing educational disparities, risk aversion, social norms, and time constraints.

5. Sustainability of the VC

As any change in a VC can be expected to have an impact at various levels, it is important to consider the three dimensions of sustainability (economic, social and environmental) (Figure 6).
Figure 6. The three dimensions of sustainability in food value chain development (adapted from FAO 2014)

The creation of added value throughout a VC should theoretically ensure its economic sustainability. But several points must be underlined:

- Stakeholders involved in VC improvement need to have reason – often a financial incentive but not only – to change their behaviour and act as suggested. In other words, the value added has to be positive for any stakeholder (not only small-scale producers) whose behaviour is supposed to change in the VC development or improvement process. Other changes that may affect stakeholders, such as work burden, should also be considered. This holds true for women smallholders targeted by these guidelines. In general, all possible incentives should be considered, given that a successful outcome depends on the motivation of the different stakeholders.

- VC sustainability depends largely on resilience and the capacity to react to economic and environmental changes. The capacity of the VC to adapt and grow in the long term should therefore feature in the VC assessment.

- Livestock production goes often beyond the income it provides on a regular basis. As it has been previously underlined, the livestock production is eventually embedded in a livelihood diversification strategy, animals being sold to answer to specific needs either on a regular basis (seed purchase, annual school fee) and irregular ones (dowry, incidences requiring immediate cash), and bought also based on the cash availability.
From a social perspective, inclusiveness of small-scale producers in the VC is a prerequisite of sustainability. Inclusion and exclusion in agricultural development centre on how producers benefit from their economic activities regardless of sex, ethnicity, religion or age. It appears unlikely, however, that all small-scale producers can benefit from VC development. Nonetheless, the proportion of participating smallholders and their diversity should be as large as possible. Given the importance of women and young people in livestock production, gender and social disparities (e.g., age, ethnicity, income, and education) should be fully considered in VC development projects, including at household and individual levels. The creation of decent jobs not only at the farm level but also along the VC should also be considered because these jobs represent opportunities for those small-scale producers who are unable to upgrade their activities. More indirectly, capacity building activities in VC projects can offer education, mobility and networking opportunities to smallholders, thus helping them find non-farm jobs.

The quality of products is a second key aspect in ensuring the sustainability of VCs. Newly-developed VCs should offer consumers a choice of food products that is more diverse, more nutritious, and safer. Food safety is an especially important issue when considering livestock products, both in terms of products conservation and of animal disease risks.

Finally, environmental impact must be addressed in VC development. Specific aspects to be considered include: what is impacted (soil, water, air, biodiversity, etc.)? Are those impacts positive or negative? What is the scale, (local, regional, global)? Also to be assessed is whether and how any impacts affect the VC itself. Rapid soil degradation, for example, can have negative consequences on grazing, while landscape management can lead to more local products being consumed through tourism.

Accounting for the different aspects of sustainability is no simple task, as (i) measuring the non-economic values of sustainability can be complex, and (ii) some trade-offs may occur as improvement in one sector may have negative consequences in others.

E. The steps in value chain analysis and development

Value chain development can be considered as a cycle with different steps, as described in Figure 7. The different steps will require to mobilize various approaches and tools, involving also a diversity of actors involved in the value chain as well as its enabling environment.

As a preliminary step, it is important to make an initial assessment of the food system/(sub)sector in relation to the context of the programme (species/commodities, beneficiaries and instruments, strategic partners, time and resources, etc.).

From the above assessment, one or more VC of interest should be selected applying a prioritization process assessing Value Chains of interest on the basis of inefficiencies identified, relevance, and potential for change and impact through well-designed intervention.
The selected VC should be characterized and mapped, based on the predefined objectives and scope of intervention. This involves several elements: defining a VC’s overall size; identifying the pathways from source to end-market(s); measuring how costs rise as the product moves along the VC and how product value increases; considering the market chain’s previous and potential development over time; identifying the VC’s comparative advantage and areas of potential growth for sales or profitability. This analysis should also seek to better understand the VC’s governance, its economic, social and environmental sustainability, and the incentives and capacities of VC actors. A variety of different economic and non-economic tools, including from the livestock sector, can be used according to the scope of the analysis and the data available. A diagnosis should be made of the root problems, leverage points and opportunities for upgrading the targeted VC.

The next step is to use the analysis to develop, in collaboration with VC actors, a vision and development strategy for the value chain. Also required is the formulation of an action-plan operationalizing both vision and strategy and attributing clear responsibilities to actors and partners in implementing those interventions.

Actions should be sequenced in a comprehensive way in order to build on capacity and address any constraints in a logical manner. Project design should also be flexible enough to adapt to eventual changes in the project.

In parallel, a monitoring and evaluation system should be put in place to track the performance and effectiveness of the actions implemented. M&E provides information allowing accountability and adaptation of the project as necessary.
Project evaluation should consider the scalability of the value chain, not only as regards its replicability across a wider geographical area, but also in terms of institutionalization involving new partners or policies. In this connection, it is important to publicize the viability of interventions and show where they are desirable and to what extent they can be applied in different contexts. It is also essential to consider the sustainability of interventions once initial project facilitations are no longer available. Evaluation could, in addition, identify new issues or opportunities for further projects.

F. Potential and limitations

Value chain analysis has some specificities that must be fully considered before any implementation. Any analysis should focus on the mapping and segmentation of the different activities involved in adding value to a particular raw material, on the different stakeholders concerned, on the interactions that exist between them, and on their consequences in terms of value added and governance. However, a value chain analysis also presents some limitations that should be taken into account. First, the traditional VC approach usually focuses more on economic efficiency and financial aspects. The SFVC approach, instead, addresses other social and environment features, even though they may be difficult to measure. Additionally, the traditional value chain approach rarely considers the household level where women and men have different roles, powers of decision and responsibilities. Such household dynamics could hinder an individual from participating in the value chain or limit potential benefits from reaching him/her.

In general, value chain development should be considered as a long-term enterprise from the onset of analysis and design, meaning that implementing projects based on VC require significant amounts of time, considering the different steps in the cycle (value chain analysis, vision and development strategy, implementation, evaluation).

Also, as noted, the complexity of value chain analysis makes it difficult to assess several value chains at once. Given that small-scale producers may be involved in multiple value chains, focusing on a specific value chain may sometimes be considered as restricting. In that case, if the number of value chains and the synergies between them are too great, VC analysis might not be the right approach. Other options may then be preferable in order to better integrate different productions and stakeholders within a given territory.
In any case, it is important to understand that SFVC should be viewed as an approach that can be adapted to specific situations, eventually in combination with other tools (see Box 2 and Annex 2). Value chains are composed of various market systems for the production of particular commodities or groups of related commodities. The value chain approach is an analytical framework for understanding these systems, the opportunities they offer and the market failures that affect competitiveness and sustainable inclusive growth. The diagnosis can then be shared and validated together with VC actors, service operators and strategic partners in order to design upgrading strategies.
II. Part II. Putting the concept into practice

A. Introduction

Part II aims to provide users of these guideline with practical advice on applying the value chain concept to the livestock sector. The VC approach, based on the FAO Sustainable Food Value Chain (SFVC) framework, is applied to the specific situations found in the livestock sector and in small-scale animal husbandry.

Value chain diagnosis and upgrading strategy is similar to that of a project cycle and is depicted in Figure 8, showing each of the six steps involved. The sequencing of these steps is important, in that the value chain analysis and development plan is end-market driven. The process is dynamic rather than linear, however. Continuous monitoring and management of the upgrading process allows for adjustments – such as tapping into new channels if the market situation changes – and reassessing capacity – e.g. working with private veterinary drug suppliers if the financial resources of small-scale producers increase. Thus, the collection and processing of data becomes a cross-cutting activity to be conducted all along the process. Some of the steps may also include further elements which can be used according to the focus of the programme.

For each step, information on usable tools, suggestions on actors to be involved, as well as relevant examples and case studies will be provided.

Figure 8. The detailed value chain livestock development cycle
B. Step 1. Preliminary assessment

A value chain is driven by the market and influenced by the context in which it operates. As noted, the value chain is defined as the full range of activities that bring the product (e.g. meat, milk, eggs, live animals) to the end-consumer, passing through various steps of value addition from production and aggregation to processing and distribution. The end-market drives the entire value chain, with market-focused collaboration between various actors. However, the value chain can be divided into a set of multiple markets along the chain, with actors buying and selling intermediary products and services. A first step in the value chain approach is to understand the larger context in which it takes place.

Who should get involved?

In the preliminary assessment, only initial partners of the project (depending on the programme, government, institutions, donors) or experts having a broad view of the global context should be involved. Eventually, if specific groups are targeted, key local partners or leader of opinion may be interviewed.

1.1 Programme objective and context

Value chain development initiatives are part of a larger development context, whether a donor-implemented development programme, a national government initiative or a public-private partnership. This section frames the starting point and overall programme strategy within which livestock sector development should take place.

Programme objective

The objective of the overall programme determines the selection, analysis and development strategies of the livestock value chain and gives it direction and purpose. Other factors to be considered include the programme’s scope and focus (i.e. its geographical and thematic focus, target groups, levels of intervention, etc.) and its approach and modus operandi.

Consider the example of a programme implemented by a development partner in north-western Kenya to improve the livelihoods of small-scale producers by enhancing the market linkages and climate resilience of their products, together with key local partners.

Sustainability being at the centre of SFVC development, the analysis in this case will focus on understanding – without neglecting other dimensions of sustainability – how climate is impacting on value chain performance. When market opportunities and challenges are identified, the strategy should target these opportunities by providing a product that consumers are willing to buy and that is produced in such a way as to improve the system’s resilience to climate change. While the initial target group consists of small-scale livestock producers, value chain upgrading may lead to partnering with a broader range of actors (veterinary services, input suppliers, commercial processors, etc.).
The programme provides the context in which the value chain approach is applied to address a particular problem. With reference to the livestock sector, this context could include the geographical scope and scale which the VC analysis should consider (country, regional or district level, or again sector, subsector, commodity or channel level), as well as specific focus within the chain, such as animal genetics and breeding, animal health, climate change and resilience, food safety and livestock policy framework.

**Programme context**

The overall programme background is reviewed to assess and understand the key elements of the context in which the programme is being implemented. These include:

- alignment of the programme with policies, strategies and priorities at relevant local, national, regional and international levels;
- geo-strategic alignment of the country, including its membership of regional organizations;
- analysis of the country or region’s macroeconomic and socio-economic situation where relevant to the value chain, including cultural and environmental factors;
- the historical context of the programme and previous interventions;
- a stakeholder mapping and understanding of target group, strategic and political partners and other relevant partners and actors;
- other programmes and institutions operating in the same thematic areas and locations.

**1.2 Programme implementation**

The *modus operandi* of the programme and its implementation, set out in project documents and detailed in programme result frameworks and operational plans, provide the structure in which the value chain approach is used. This includes the following aspects:

- Instruments and approaches of project implementation:
  - What is the level of intervention: policy support, institutional support, community development, etc.?
  - What instruments is the programme using in order to achieve its objective: technical assistance, seconded experts, financial support, infrastructure, etc.?
  - What are the specificities within the livestock sector, for example, a given species or commodity, a particular aspect such as animal health etc.?

- Beneficiaries, strategic partners and other stakeholders:
  - Who are the target beneficiaries of the programme (e.g. pastoralists, women and young people, etc.)? What are key drivers and key challenges they face?
  - Who are strategic political and implementing partners?
  - Which other stakeholders need to be considered?

- Timeline and resources:
  - What is the timeline of the programme? When is the value chain being upgraded?
  - What resources are available? Is co-funding foreseen? Can public-private partnerships provide additional resources for upgrading?
The timeline and resources also determine the detail and depth of the value chain analysis to be undertaken and define the scope of upgrading activities.

- Scaling up and exit strategy:
  - What are the programme’s scaling up strategies? What supporting value chain interventions are needed?
  - Is there a clear exit strategy from the onset of the programme? Who are the key partners involved? Do they have all the tools they need and have they linked up with the relevant actors so they can carry on with the project after it ends?

### 1.3 (Sub)sector characterization

Once the overall programme strategy and context has been clarified, a preliminary assessment of the livestock sector is undertaken, with particular focus on market analysis. This study covers the development of the livestock sector and aims to understand existing market opportunities and identify any gaps between demand and supply. It examines the subsectors and production systems present in the sector, its economic relevance and reach, the actors involved as well as the activities of any small-scale livestock producers’ groups, and the challenges they face.

This information (See Box 3) will help users understand:

- market opportunities and potential, market trends and market segments, trade trends (import export and domestic markets, market requirements and standards);
- priority subsectors (e.g. cattle, small ruminants, pigs, etc.), the main commodities (meat, leather, milk) and other livestock outputs (e.g. manure, draught power, stock (as assets). This is important for value chain selection;
- livestock production systems and conditions under which the value chains operate: e.g. solely livestock production (landless or grassland-based systems), or integrated farming (rainfed or irrigated) (Steinfeld and Mäki-Hokkonen, 1995), together with maps of production areas;
- economic and social relevance of the (sub)sectors; contribution of each sector to the socioeconomic situation (e.g. to GDP, food security and nutrition);
- current policies and strategies affecting the (sub)sectors;
- role of small-scale producers, rural communities and other actors, focusing on opportunities and constraints. Special attention should be given to gender-differentiated roles and capacities, as well as youth.

Based on the programme and context analysis, and the characterization of the (sub)sectors, the objective, scope and parameters of the specific intervention are defined, preferably together with strategic partners. This sets the boundaries of the value chain and of the proposed upgrading interventions.

These guidelines can be applied at all levels of intervention, from local value chains to national, regional and global ones. What is important is defining the scope of the value chain prior to undertaking the analysis. Being able to achieve the appropriate product quality (characteristic features, taste, appearance, etc.) will ensure successful results.

Furthermore, a livestock value chain may be interconnected with other value chains since livestock smallholders usually tend to produce crops and livestock together in mixed systems. Even though farming systems are integrated, e.g. duck-rice farming in Viet Nam), the value chain(s) are treated...
separately, taking into account, however, the fact that they have a number of areas in common such as production, opportunity cost and trade-offs, as well as decision-making processes and marketing.

Box 3. Data sources for programme strategy and sector context

In order to assess and understand the context in which the livestock sector is to be upgraded, the primary source of data and information is secondary literature. This includes programme strategies and documents, national and sectoral policies and strategies, socio-economic studies, thematic research papers and analyses.

Primary information can be sought to fill information gaps, through discussions with key informants or workshops held with partners and key stakeholders working in the geographical area and/or in the (sub)sector of the proposed intervention (see Box 6).
C. Step 2. Value Chain Selection

The selection of the value chain(s) is the first, important step in ensuring the success and impact of project interventions aimed at developing the livestock sector.

The (sub)section characterization in Section 1.3 describes the overall market potential, the sector context, the (sub)section(s), and the actors (focusing on small-scale livestock producers) as a basis for selection of the value chain (Schneemann & Vredeveld, 2015).

Who should get involved?

Again, the number of person involved at this stage should stay relatively limited, considering also initial partners, strategic stakeholders (ministry officers…) key actors of the value chains considered, who should participate in the scoring and selection of value chains.

However, a more thorough process is needed for the prioritization and selection of the value chain(s) according to criteria grouped into three broad categories (Figure 9):

- **Market and growth opportunities**: assesses the growth potential of the sector and its competitiveness so as to understand the potential for a sustainable and significant increase in the employment and incomes of small-scale producers.
- **Relevance of the sector and its development impact**: assesses the relevance of the sector to the empowerment of small-scale livestock producers while increasing resilience, supporting biodiversity and minimizing environmental impact.
- **Strategic factors and feasibility of change**: assesses the opportunities for intervention, the feasibility of stimulating sustainable inclusive growth, taking account of programmed and national priorities.

**Figure 9. The framework for livestock value chain selection**
Within the above framework, the criteria listed in Table 1 can help guide the user in selecting a value chain that can strengthen the livestock sector’s competitiveness, empower small-scale producers, and increase their resilience (see also Box 4). Other examples may be found in Schneemann & Vredeveld, (2015).

The criteria selected are determined by the objectives and scope of the programme and value chain intervention (i.e. market access, nutrition, climate resilience, animal health focus, etc.). They have, of course, to be adapted to the specific context under study. All criteria are given a score (for instance 0–4) and weighted according to their importance to the programme.

### Table 1. Example of selection matrix and key criteria to be considered for the selection of value chains

<table>
<thead>
<tr>
<th>Key criteria</th>
<th>Score</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market and growth opportunities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth potential (current and future demand)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitiveness (relative to competitors and substitutes products)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementarity/competition with existing or potential alternative value chains and livelihood activities (e.g. other livestock, cropping or off-farm employment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market systems and regulatory potential for pro-poor growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry leadership, investment opportunities and willingness of lead firms to invest in small-scale producers and enterprises</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Relevance and developmental aspects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential for inclusiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender and women’s empowerment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment potential (especially women and young people)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutritional benefits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainability (e.g. natural resources endowment, negative externalities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate resilience potential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecosystem services provided</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoonotic risks</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Strategic factors and feasibility for change</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities for intervention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feasibility to stimulate change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programme mandate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National and/or institutional priority sectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementarity to other interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of funding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Based on the chosen criteria with their scores and weights, total scores can be calculated and the value chains can be ranked to make the selection. The selection process can be carried out internally, or together with partners and key value chain actors. This will validate the selection process and ensure that strategic stakeholders are on board.

At this stage it is important to consider how small-scale producers are involved in a network of value chains. For instance, if the project targets chicken production, the fact that small-scale producers frequently supply both meat and eggs must be considered, since focusing on one of these two commodities may affect the second, e.g. by replacing dual-purpose chickens with specialized broilers or layer strains.

During the selection process, the level of aggregation of the intervention should also be determined. Figure 10 highlights the different aggregation levels, from subsector, to product or product category, to specific market channel(s). The selection should diversify risks through the selection of multiple commodities and market channels while also focusing on targeted opportunities and considering resources and time constrains.

Though value chain selection takes place at the planning stage of the intervention, it can be revisited later, during implementation, to accommodate factors such as new end-market opportunities.

For example, in the context of a long-term programme targeting the dairy cattle subsector in a given region, it can be decided, on the basis of the assessment of market opportunities, to improve the value chain and develop processing for specific milk products (e.g. cheese, yoghurt, etc.).
Figure 10. Breakdown of livestock sector for analytical and intervention purposes (adapted from Nuweli et al., 2013)

Geographical scope: e.g. Senegal

- **Sector**
  - Livestock

- **Sub-sector(s)**
  - e.g. cattle

- **Value Chain(s)**
  - e.g. dairy products

- **Market channel**
  - e.g. Dairy products (yogurt) from Walo and Dieri areas targeting Dakar urban market
D. Step 3. Value Chain analysis

Value chain analysis examines various market systems producing a particular commodity, or group of commodities. In order to develop the sector, the practitioner uses the value chain approach as an analytical framework to understand these systems, the opportunities they offer, and the market failures that affect competitiveness and sustainable inclusive growth. The diagnosis can then be shared and validated together with value chain actors, service operators and strategic partners in order to design upgrading strategies.

Who should get involved?

The extensive value chain analysis requires to get the information from the different actors involved in the value chains, considering also those involved in the support function and enabling environment. This step is probably expected to be the more extensive in terms of actor involvement. Interviews, group discussion, visit and surveys are especially important to better understand the conduct of actors (see Box 6 Part 2.), as well as potential incentives to facilitate changes in their behaviour. It is also often the opportunity to raise awareness and get participation from key partners to be involved in the next steps of the VC cycle.

3.1 End-market analysis

The central driver in the value chain is the end-market, namely the product market in the case of the livestock sector. Ultimately, the performance of the livestock value chain is dependent on the performance of the end-market, through the related market channels. Hence, it is first necessary to understand the market opportunities, dynamics and trends as they set the parameters for economic growth (Table 2).
This would include an estimation of expected growth in demand for livestock products embedded in the context of the programme. For example, extraction of consumption statistics from international databases on national consumption trends for different livestock products may provide insight on growth perspectives (see Box 5).

### Box 5. End-market selection

- International markets are usually more difficult to access as standards and regulations are stricter and may include sanitary and phytosanitary standards, traceability, supply reliability, etc. Local, national and regional markets, where standards and regulations are less rigorous, may be a better starting point when developing products that can vie in international markets.

- In order to ensure the success of upgrading activities and minimize risk, multiple interrelated end-markets types, segments and channels should be targeted.

- Informal markets have benefits in terms of lower prices, greater access to consumers in rural areas and to the poor, and offer other advantages such as greater product freshness. However, linking these to more formal markets will bring benefits in terms of upgraded products, resulting in increased prices and margins. Furthermore, as informal markets are unregulated there are risks regarding food safety, zoonoses and public health.

A breakdown of end-markets into market segments and market channels is also useful in order to understand the characteristics of individual market components and their potential for growth. Comprehensive market knowledge is critical for value chain actors as well as supporting actors when investing resources and building capacities to position products and services in specific market segments.

The end-market analysis should consider local (and informal), domestic and international markets:

- For international markets: global market trends and trade patterns, as well as export market opportunities, should be assessed, together with the requirements and quality specifications needed to access those markets.

- For domestic markets: national and local, as well as formal and informal markets, should be considered. Small-scale producers usually operate in informal markets, hence an understanding of these and their linkages to formal markets is important.

Given that markets are dynamic, market analysis is not a one-off activity but should be continuously revisited throughout the implementation of the project to keep abreast with trends, new growth opportunities, competitors, upcoming niche markets, and changes in the regulatory environment. For example, in 2008, the Ethiopian government applied a 150 percent export tax on raw hides and skins (RHS) and semi-finished leather products, and another 150 percent export tax on crust leather in 2012 in order to encourage the leather manufacturing industry (Fitawek, 2016).
Table 2. Aspects of end-markets to be assessed, with relevant information and data needed

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Type of market</td>
</tr>
<tr>
<td></td>
<td>▪ Market location and proximity: local markets, domestic markets, regional markets, export markets, distance to transhumance roads</td>
</tr>
<tr>
<td></td>
<td>▪ Market type: high-end-market, niche market etc.</td>
</tr>
<tr>
<td>2.</td>
<td>Market segment and channels</td>
</tr>
<tr>
<td></td>
<td>▪ Differentiation of market segments</td>
</tr>
<tr>
<td></td>
<td>▪ Characteristics of segments: price-leadership, quality leadership, differentiation</td>
</tr>
<tr>
<td>3.</td>
<td>Size and growth</td>
</tr>
<tr>
<td></td>
<td>▪ Size of markets, including volume and value</td>
</tr>
<tr>
<td></td>
<td>▪ Ten-year forecasts and growth rates</td>
</tr>
<tr>
<td>4.</td>
<td>Trends and dynamics</td>
</tr>
<tr>
<td></td>
<td>▪ Prices (over the year, across years, according to grades)</td>
</tr>
<tr>
<td></td>
<td>▪ Consumer preferences, branding strategies, wholesale and retail distribution procurement systems</td>
</tr>
<tr>
<td></td>
<td>▪ Drivers of the dynamics (including behaviour of lead actors, free trade agreements, regulations)</td>
</tr>
<tr>
<td></td>
<td>▪ Determinants of demand, including seasonality, religious holidays, economic cycles</td>
</tr>
<tr>
<td>5.</td>
<td>Critical success factors</td>
</tr>
<tr>
<td></td>
<td>▪ Identify critical success factors in these markets (e.g. price, quality, branding)</td>
</tr>
<tr>
<td></td>
<td>▪ Key players and their competitive strengths</td>
</tr>
<tr>
<td></td>
<td>▪ Current and potential competitors and possible substitutes (that influence price and trade volume)</td>
</tr>
<tr>
<td></td>
<td>▪ Benchmarking (current position vs most competitive country/firm)</td>
</tr>
<tr>
<td>6.</td>
<td>Operational practices and barriers to entry</td>
</tr>
<tr>
<td></td>
<td>▪ Operational practices, such as logistics</td>
</tr>
<tr>
<td></td>
<td>▪ Standards (especially sanitary ones), quality, quantity and reliability required to access market</td>
</tr>
<tr>
<td>7.</td>
<td>Small-scale producers' access</td>
</tr>
<tr>
<td></td>
<td>▪ To complement the above, a specific analysis of the constraints faced by small-scale farmers, e.g. inappropriate rules and regulations, physical distance, etc.</td>
</tr>
</tbody>
</table>

Though end-markets are the driving force, users should note that a value chain is made up of numerous market components, such as input markets and service markets. Intermediary markets exist at all stages of a value chain.

For example, in the finished leather shoes market, intermediary products in the associated value chain are also exported. These include live animals (for export to halal markets in the Middle East), raw hides and finished leather for export to China for the manufacture of shoes. In order to curb the trade of intermediary goods, the Ethiopian government has applied a tax on the export of unfinished and semi-finished leather to encourage “Made in Ethiopia” manufacturing of finished leather products.

### 3.2 Value chain mapping

Value chain system mapping forms the basis of value chain analysis. It reduces the complex economic reality of diverse business operations, multiple actors, interdependencies and relationships to a comprehensible visual model. The map acts as an analytical tool as well as a communication tool.

A sustainable value chain is part of a wider market system, with actors working in numerous segments (e.g. input markets, intermediary product markets, support service markets) in order to meet the needs
of the end-market. It is necessary to understand this system in its entirety, because the underlying causes of any constraints to competitiveness may lie in the supporting market system or in the enabling environment.

While understanding the overall market system, it is necessary to break down the various components (business operations, markets players and business relations) of the value chain into its interdependent subsystems. A value chain operates on three levels:

- The core value chain, which includes the actors involved in the production, aggregation, processing and distribution (wholesale and retail) of the product along the value chain, together with the links among these actors (type of relationship, quantities involved by market channel, etc.).

- Extended value chain and supporting functions that ensure smooth business transactions, such as provision of knowledge and skills, research and development services, veterinary and financial services, etc.

- The enabling environment, which comprises organizations, formal and informal rules and regulations that govern how business transactions are made. These all take place within a political, economic and social framework which is dependent on, and at the same time influences, the natural environment.

Box 6 details the main information sources to be used for value chain mapping.
Box 6. Data and information sources for value chain mapping (1)

Part 1. Desk Review of secondary literature

For many value chains and livestock subsectors, a great deal of published information from research institutions, development partners and governments already exists. It is important to review and analyse this information before establishing what primary research and/or fieldwork is needed to obtain specific data, fill information gaps or update information.

Secondary and primary data and information for the analysis also feed (as baseline data) into the monitoring and evaluation process for the value chain intervention(s). However, data sourcing for monitoring and evaluation purposes should be carefully designed as data need to be consistent and hence comparable over time.

Secondary research

Desk review of the following documents should be undertaken for both quantitative and qualitative data:

- own programme documents and those of development partners (operating in the same geographical location, (sub)sector and value chain;
- national documents, data and strategies from Ministries of Agriculture, Industry, Trade etc.;
- census statistics, socio-economic surveys from Census and Statistics Bureaus and relevant Ministries, central bank, customs office;
- sectoral strategies and research papers from ministries, national research agencies, regulatory bodies, think tanks, professional and industry associations;
- trade and market data and documents, global databases (such as FAO, World Bank, International Trade Center – Trade Map);
- industry and sector surveys and documents from international organizations such as FAO, World Bank, IMF, ILRI, and other development partners.
Box 6. Data and information sources for value chain mapping (2)

Part 2. Primary research

Desk review of existing data and information will help identify information gaps that can be filled through primary research. Selection of one or more research method depends on available resources (budget, human resources and time) and the kind of information needed. Furthermore, triangulation through different data collection methods is relevant to validate the data.

- **Key informant interviews** are usually used for targeted information from strategic actors (whether operational or political). Usually, all value chain analytic data gathering entails interviewing key informants in some form as a first step. Key informant interviews are usually conducted in an open or semi-structured format. They usually collect qualitative data, but can be used to validate quantitative data. Key informants include senior political partners, implementing partners (both public and private), community and association heads, leaders in academia and science, and other development partners.

- **Focused group discussion** is a form of qualitative data research and usually entails a group of persons (up to 10) with similar roles and functions in the value chain. Focused group discussions are conducted in a semi-structured format covering relevant topics specific not only to the group but to the chain as a whole.

- **Surveys** involve wider groups. The survey method can be used to collect both quantitative and qualitative data, and questions can be either closed or open-ended, and can be self-administered or conducted by enumerators or project staff. A survey needs to be carefully designed (topics to be included, sample size, etc.) and tested, prior to being conducted. Surveys using the same format can be conducted throughout a project for monitoring and evaluation purposes.

- **Field visits and observations** are central to understanding the programme context, and can complement the above research. It is usually a qualitative method of research, providing observations and insights into the value chain and project sites, although quantitative data can be gathered as well.
Box 6. Data and information sources for value chain mapping (3)

- **Phenotypic characterization** is a prerequisite for the assessment of production levels. It is very important to quantify the performance of the principal production traits (size, growth, milk production, fertility, egg production, etc.) and to identify possible improvements either on the breeding side or in the production environment (feed, veterinary care, housing etc.).
  - ‘Primary characterization’ refers to activities that can be carried out in a single visit to the field (e.g. measurement of animals’ morphological features, interviews with livestock keepers, observation and measurement of some aspects of the production environment, mapping of geographical distribution).
  - “Advanced characterization” requires repeated visits. It includes the measurement of productive (e.g. growth rate, milk production) and adaptive (e.g. resistance or tolerance to specific diseases) capacities. As most traits of economic importance require advanced characterization, some trade-off may be required depending on resources available for the project. Proxy indicators of production traits can be used (adult body weight or length, for growth, estimation of dairy production based on a specific farmer survey, etc.) or sampling characterization may be limited (see FAO guidelines on Phenotypic characterization of animal genetic resources (Annex 2) for more information on this topic).

Eventually the scope of a project may require using specific tools, such as epidemiologic studies, when focusing on zoonotic risk, or phenotypic characterization when considering the productivity of animals.

Please refer to Annex 3 for a breakdown of questions and information relevant to the various stages of livestock value chain analysis (in terms of business operations, and combining both quantitative and qualitative data).

**Part 3. Validation of data, value chain analysis and mapping**

As a first step, the reliability of data collected should be carefully cross-checked (e.g. through triangulation). Prior to defining a value chain development vision and formulating an upgrading strategy and action plan, it is useful to vet and validate the value chain analysis and conclusions through a **stakeholder workshop**.

The objective is to bring together various stakeholders who are responsible or strategic for critical business operations, services provision and the enabling environment. Academics and think tank members familiar with the industry and value chain should also be invited.

These participants will be critical in helping design the upgrading and intervention strategies as they are the central actors and the key driving force in the development of the sector. They will also assist in prioritizing the opportunities to be seized and challenges to be overcome.
Core value chain map

The actual production of a commodity takes place in the core value chain (be it meat, milk or dairy products, eggs, skins and hides or live animals). This core value chain consists largely of private-sector actors and their business linkages transferring inputs into a product to cater to the demands of the end-market. Figure 11 provides an example of the mapping of a beef core value chain (with the four steps detailed below).

1. End-market

Given that we are looking at market-led development, the value chain map begins with the selected end-market analysed in the previous section, i.e. what products are being produced and for what end-market, with what quality, in what quantity, and according to what consumer preferences. One product can serve several end-markets, through various market channels. Hence within one value chain, there may exist subsidiary value chains based on different market channels. Value chain maps should optimally focus on interrelated market channels, in which production, aggregation and processing are interlinked.

2. Core business operations

Map out the main business functions that add value to the product along the value chain to the end-market. A short description can be included to explain what these functions entail. A livestock value chain will usually include the following five core functions, whose complexity and linkages depend on the commodity’s specific value addition process.

- inputs to the livestock sector, which includes animal genetics, feed and veterinary drugs;
- production and its organization;
- aggregation and its organization, which entails marketing, collection of the products, storage (including cold chain), fattening, transport and trading;
- slaughtering, processing and manufacturing;
- distribution of the product to the end-market, either directly to local markets or to wholesalers, retailers and exporters for international markets.

3. Core value chain actors

Value chain actors are the individuals and enterprises that directly operate in the production, aggregation, processing and distribution of a commodity. They are largely private actors, e.g. livestock keepers, traders, micro/small/medium enterprises or private manufacturing companies, but can include public-sector institutions (e.g. animal genetics and other input providers). These various actors may differ in terms of size and of their contribution to the chain; they may also have different access to, and control over, resources such as inputs and technology, or be connected the end-market through different business relations and market channels.

In some cases, the same value chain actor is present in more than one business. This is often the case in integrated supply chains where, for example, firms engaged in pig meat production may also own feed mills (inputs), breed reproducers (inputs), their own slaughtering facilities (processing) and their own retail outlets (distribution).

4. Business linkages
Business linkages show the flow of product, and can include elements such as information exchange, technical skills, know-how and technology exchange, price determination, payments, contracts and embedded services.

The market system of a value chain is made up of multiple market transactions as the product moves along the different stages of the chain. These can range from uncoordinated and ad hoc “spot market” transactions, to binding contracts (with embedded services and secured markets) and vertical integration (see governance aspects below).

Business linkages in a value chain entail both vertical and horizontal linkages. Vertical linkages are linkages between actors at different stages of the value chain (upstream to downstream) where an enterprise covers several functions on the value chain or has close relations to upstream production. Horizontal linkages\(^1\) entail collaboration (or conflict) with actors operating at the same stage. Horizontal collaboration through strengthened producer organizations is particularly important in order to empower small-scale livestock producers and to lower transaction costs.

The type of business linkage depends on the requirements of the market.

For example, in regular, informal local markets, spot transactions are suitable when small-scale livestock producers sell their animals.

However, formal markets are more regulated, and end-market requirements are more stringent in terms of standards, quality, reliability and quantity. More formal contracts and coordinated relations are necessary to make sure the demands of the end-market are met.

In a dairy value chain, for instance, a commercial farm, which produces and processes dairy products, may engage neighbouring, small-scale livestock producers in binding contracts to ensure a steady supply of quality milk. It can also provide embedded services such as veterinary assistance (including artificial insemination) and animal feed, costs of which are deducted from payment for the milk.

The information and mapping of business linkages provide the basis for the governance analysis (see section 3.3.2).

Figure 11 maps out the core value chain, showing the functions, the actors, and their relationships (business linkages). A value chain map is usually made up of three layers, as previously noted. The support functions and the enabling environments – mapped out in the next section – complete the value chain map. Geographical information can be also used (Box 7). All this forms the basis of the value chain analysis.

\(^1\)The terms horizontal or vertical linkages do not relate to the direction used when mapping the linkages between actors. A value chain map can be drawn vertically or horizontally and does not affect the terminology.
Figure 11. Example of a core cattle meat value chain map depicting business operations, actors and business linkages
Box 7. Geographical Information System (GIS) mapping and geographical mapping (1)

To complement the value chain map, the user can represent product flows and production areas using Geographic Information System (GIS) mapping of the livestock subsector to better assess the opportunities and constraints faced in the value chain. This may include information such as population density, commercial farms, small-scale livestock producers, pastoralist stock routes, roads and infrastructure.

Simple geographical mapping can also be drawn to highlight production areas and the physical location of other stages of the value chain, in relation to specific project issues such as:

Where are the production areas located? What are the pastoralist routes? Is there seasonality in trade and movement patterns? Where is the aggregation point and markets for intermediary products? Where are processing plants located? Where are end-markets located, what routes are they distributed on? Where are the areas to be monitored for potential wildlife/livestock, livestock/livestock or livestock/human contact in relation to zoonotic risks?

The example below illustrates the complexity of livestock trade in West Africa, underlining the border crossing points for livestock.

*Synthesis of recent national and cross-border movements and livestock trade patterns in West Africa (to be adapted from CIRAD-FAO 2012)*
Extended value chain map and enabling environment

5. Support functions and actors

The core transactions and value chain actors are supported by business development and other related services that facilitate the production, aggregation, processing and distribution of the product(s) along the value chain to the end-market. These actors may be public sector service providers (e.g. extension service providers, marketing boards, health and safety inspection agencies, development banks) or private bodies (e.g. loan companies and cooperative banking services, certification bodies, professional associations).

Often, service providers cover multiple value chains and sectors and are important leverage points for scaling up and cross-sectoral improvement.
The three main types of support functions are:

- **Input providers.** Providers of physical inputs are found throughout the value chain, supplying not only the main inputs needed for production but also more specialized items such as liquid nitrogen for artificial insemination tanks, chemicals for tanneries, and packaging for distribution.

- **Non-financial services.** These can include veterinary services, extension services, inputs provision, research and development, laboratory testing, certification and health and safety inspection, training and skills.

- **Financial services.** Credit and loan companies are often crucial, whether they are government-run, cooperative savings groups, or private loan providers. The services they offer include micro-credit, livestock insurance, equipment and infrastructure finance, and embedded credit. They are fundamental in providing the working and investment capital necessary for sustainable value creation (see Box 8).

### Box 8. Finance

Access to suitable financial services is a critical factor in ensuring the competitiveness and sustainability of a value chain. The livestock sector is unique in that live animals themselves represent a financial asset which livestock keepers use as collateral and for savings and wealth creation.

Financial instruments relevant to livestock owners include: savings (individual or group savings); loans (from banks and MFIs) for working capital, equipment, infrastructure and animal purchases; embedded credit from suppliers, traders or processors; and animal insurance.

Loans for, and investment in, livestock are often viewed as risky. It is therefore important to work on the improvement of linkages with finance. Providing farmers with basic skills in marketing, accountability, financial planning, or getting help from a cooperative can often help to improve such links.

Both demand- and supply-side aspects need to be considered:

- **Supply.** What are the financial services available to value chain actors and in what form? Who are the main actors in providing these services (Banks, MFIs, value chain actors (embedded credit), cooperatives, rotating savings and credit associations (ROSCA)? Are these formal or informal? What services and products are available and are they suitable for small-scale livestock producers (e.g. mobile banking, warehouse receipt systems, etc.) or for women? What are the terms and conditions, and the transaction costs (including distance to bank, etc.)?

- **Demand –** What do finance and financial services require from value chain actors? What is the financial literacy and the level of understanding of those actors?

6. **Enabling Environment**

In order to understand the context and framework in which the selected value chain/s operate, one needs to look at the enabling environment. This entails societal elements (e.g. government policies, cultural factors, etc.) where formal and informal rules and regulations govern the way in which businesses make transactions (Table 3). The enabling environment also includes infrastructure (transportation, roads, cold chains, etc.) and natural resources (land, water climate) (Table 4) critical to the productivity and sustainability of the livestock sector.
Regional and international enabling environments may also need to be considered, depending on the scope of the intervention and markets. For example, with nomadic pastoralists, livestock routes can be transboundary, hence a bilateral and regional enabling environment is relevant. With global beef value chains, the international enabling environment, such as CODEX food safety standards, is important.

Table 3. Societal elements

<table>
<thead>
<tr>
<th>Elements</th>
<th>Sub-elements and examples</th>
</tr>
</thead>
</table>
| Institutional elements | - Political strategies and policies (e.g. poverty reduction strategies; safety nets, including care service provision)  
- Economic strategies and policies (e.g. export promotion; subsidies; tax reduction for imports of raw materials and machinery)  
- Trade agreements (e.g. Everything but Arms [access to EU markets]; African Growth and Opportunity Act [access to US markets])  
- Laws, regulations and enforcement thereof (e.g. land tenure, property rights, contract law enforcement, by-laws for cooperatives)  
- Standards, certification and licensing (e.g. CODEX and other food safety standards; licensing restrictions for para-veterinarians) |
| Organizational elements| - Standards, certification and licensing (e.g. CODEX and other food safety standards; licensing restrictions for para-veterinarians; USDA APHIS  
- Education, hospitals and research facilities  
- Industry, sectoral and professional associations (e.g. Ethiopia Meat Producers’ Export Association) |
| Infrastructure elements| - Public infrastructure (e.g. roads, railways, transport facilities)  
- Natural infrastructure (e.g. stock routes and watering holes)  
- Market infrastructure  
- Trade infrastructure (e.g. ports, dry ports)  
- Other infrastructure (e.g. ICT, electricity grids) |
| Socio-cultural elements| - Cultural and religious norms and customs (e.g. halal meat preparation)  
- Informal political linkages and patronage  
- Community status  
- Gender-based systems  
- Consumer preferences |

Table 4. Natural elements

<table>
<thead>
<tr>
<th>Natural elements</th>
<th>Sub-elements</th>
</tr>
</thead>
</table>
|                  | - Availability and use of natural resources (e.g. land, soil, climate, weather, biodiversity, pastures, fodder, forage, genetics)  
- Animal and plant health |

Not all elements can or have to be mapped out in the value chain, though they should be considered when analysing the selected value chain(s). It is important to differentiate between essential conditions in the enabling environment (e.g. trade agreements, land tenure and property rights, infrastructure) sufficient conditions (e.g. standards and certification) and useful ones (e.g. informal networks), hence prioritizing the enabling environment elements to be included in the mapping.
Figure 12 is a continuation of the core value chain map (Figure 10), depicting the support functions and the enabling environment. Together they form one value chain, laying the basis for the value chain analysis.

**Figure 12. Complete value chain map of both core actors and the support functions and enabling environment**
3.3 Analysis of the value chain

Once the value chain is properly mapped, further analysis should determine how the VC is performing in terms of incentives and capacities, governance, economics, and sustainability. Once these critical factors are characterized, specific approaches could be used to identify inefficiencies, points of leverage, trade-offs, strengths, weaknesses, threats and opportunities throughout the value chain (i.e. market system and strategic analysis). Note that the analytic tools described here do not represent an exhaustive list. They should be completed with specific analyses (e.g. food loss evaluation, life cycle assessment, etc.) depending on the focus of the programme (see also Boxes 9 to 17).

3.3.1 Incentives and capacities

In order to develop a livestock value chain, one must first understand the behaviour of market actors to work out why the market system is underperforming, and what capacities, functions and rules are inadequate, mismatched or absent (The Springfield Centre, 2015). The way actors behave is shaped in part by their environment, but also by their capacities and the incentives offered by the system. In the specific case of livestock, it is especially important to consider issues such as access to market (in terms of physical access, product conservation, and information on market prices); capacity to meet seasonal variations in supply and demand; and the multifunctionality of livestock (i.e. the use of animals as cash reserves).

Facilitating change in the behaviour of value chain actors (both at individual level and in their interactions) requires an understanding not only of the ability to change (capacity) but also of the willingness to change (incentives). Incentives (both financial and non-) determine why actors behave in a certain way, why they make certain decisions, and what motivates them to change their behaviour. It is therefore important to understand the different roles livestock play for small-scale producers, besides production, and how they interact.

In Gambia, for instance, cattle farmers prefer the N’Dama breed to crossbred animals or Zebu. Despite their smaller size and milk production, N’Dama are viewed as more resilient and are prized as draught animals (Steglich and Peters, 2003). Another issue relates to the capacity of producers to respond to price variations and peaks in demand for small-ruminant meat during Muslim religious festivals.

Budisatria et al. (2008) showed that in some regions of Indonesia most farmers could not offer animals of the right age and size in time for those festivals (when they fetched higher prices). Flocks were small and animals were kept to meet urgent cash needs, in particular at the end of the dry season and the start of the school year.

Table 5 shows the various orientations and levels, and the elements to be considered therein, when reviewing incentives and capacities.
Table 5. Potential incentives and capacities to be considered

<table>
<thead>
<tr>
<th>Orientation &amp; Level</th>
<th>Elements to be considered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incentives</strong></td>
<td>Financial</td>
</tr>
<tr>
<td>▪ Economic</td>
<td>- Profit margins</td>
</tr>
<tr>
<td></td>
<td>- Prices of inputs and products</td>
</tr>
<tr>
<td></td>
<td>- Cost structure</td>
</tr>
<tr>
<td></td>
<td>- Transaction costs</td>
</tr>
<tr>
<td></td>
<td>- Opportunity costs</td>
</tr>
<tr>
<td></td>
<td>- Competition</td>
</tr>
<tr>
<td></td>
<td>- Attitudes towards risk</td>
</tr>
<tr>
<td></td>
<td>- Risk factors</td>
</tr>
<tr>
<td></td>
<td>- Resources</td>
</tr>
<tr>
<td>▪ Social or purpose-oriented</td>
<td>Non-financial</td>
</tr>
<tr>
<td></td>
<td>- Cultural norms and ethics</td>
</tr>
<tr>
<td></td>
<td>- Personal preferences and attitudes</td>
</tr>
<tr>
<td></td>
<td>- Reputation and status</td>
</tr>
<tr>
<td></td>
<td>- Gender roles and responsibilities</td>
</tr>
</tbody>
</table>

| **Capacities**      | - Technical (knowledge and ability) |
|                     | - Financial (to undertake actions)  |
| ▪ Individual        | - Physical (assets, human resources, outreach such as customer base) |
| ▪ Institutional     | - Strategic (vision, networks, governance) |
| ▪ Enabling environment | - Informational                   |
|                     | - Social (status, reputation)      |
|                     | - Personal or cultural (attitudes, leadership, etc.) |

Collective action, critical for small-scale producers to overcome market failures and maintain market positions (Marlekova et al., 2009), needs both capacities and incentives to succeed. Although individual and institutional capacities (i.e. accountability and enforcement rules) need to be in place, incentives for cooperation (i.e. the risks and costs involved vs the benefits of an action) are critical to ensure the success of a collective initiative.

Furthermore, incentives and capacities need to be considered beyond any one value chain but viewed as they affect related value chains and off-farm factors.

For example, when a small-scale producer is faced with purchasing more expensive, improved breeds, he or she will take both farm and off-farm expenditure (food items, schooling etc.) into account,
including trade-offs with any crops the farmer is producing. Hence the decision should consider input insurance, extension advice on the benefits of improved breeds, market linkages and even credit provision for off-farm expenditure.

The many roles played by livestock are of particular relevance when looking at incentives. From an economic perspective, while contributing to food supply and cash income generation, livestock can also be considered as collateral for a loan or as a source of manure to be sold or used as fertilizer. Moreover, social factors also come into play, with animals conferring status or weighting in the gender balance and distribution of power. Women raising livestock tend to prefer hardy, low-input breeds that can forage for themselves and reproduce easily (FAO/Köhler-Rollefson, 2012).
Box 9. Livestock issues to consider in VC analysis
(from the production side)

Livestock-specific issues to be considered in the analysis of a core value chain map:

**Animal breeding**
- Breeds kept in the target area – exotic, crossbred, indigenous, etc. Breeding practices and production systems. The main advantages/disadvantages of each system from the local perspective. Differences between breeds, practices and systems;
- Major breeding-related problems in the development of livestock production in the area, and possible solutions;
- Products, services and trends related to animal breeding/artificial insemination. Access, costs, and payment issues;
- Location of suppliers (artificial insemination, reproducers) and accessibility for targeted small-scale producers;
- Main constraints to the management of animal breeding (land, labour, capital, information).

**Animal feeding**
- Feeding practices applied – feed sources, types and quality; feed and water availability (by season); supplementary feeding strategies; feed and supplements collected/purchased (by season); feed conservation/storage systems; coping strategies for forage scarcity. Main constraints related to feeding, and gender and age of feeders;
- Relative productivity and resilience of the different forages available;
- Quantities of feed purchased – crop residues, green fodder, industrial by-products, etc.; main sale and purchase channels; prices applied in these channels in different seasons;
- Any advice on feeds and feeding available? Actors involved and quality of advice;
- Systems used for seed production and supply;
- Prices of different feeds and fertilizers available and affordability for target groups (consider seasonal price variation and payment terms);
- Production and sale volumes of feeds and fertilizers;
- Accessibility of feed and fertilizer suppliers to target groups.

**Animal health and veterinary services**
- Economically important animal health issues (prevalence, morbidity, mortality rates, causes, impact, disease control strategies used, treatments, etc.);
- Availability, reliability and sales volumes of drugs and vaccines, acaricides, insecticides and other chemical treatments;
- Service providers commonly used (public, private, community-based) and their relative advantages and disadvantages.

**Livestock identification and traceability**
- Livestock identification and traceability systems used. What are the costs and benefits of compliance? For which markets are they important?

**Food safety/quality control and certification**
- Organization of food safety/quality control. Who are the eventual services providers and how are services paid for;
- Sanitary and phytosanitary requirements for trade according to the different potential markets;
- Certificates of origin and health inspection. Market requirements;
- Awareness of small-scale producers about standards and certification processes.
3.3.2 Governance

Analysing the governance structure of the value chain is important in order to understand the dynamics and distribution of power among the various actors involved. Governance builds on the analysis and mapping undertaken in section 3.2 on business linkages and coordination and looks at the system of coordination, regulation and control along the entire value chain. It describes the power relations in the chain and in the establishment and enforcement of rules that determine the overall shape of a specific

---

**Box 10. Animal disease and risk management**

Animal disease and risk management is an essential factor to be considered in any livestock value chain. In order to address disease prevention and control in the value chain, it is necessary to:

- understand the production systems and the stakeholders involved (their perception of the risk, incentives and capacities etc.) – i.e. value chain analysis;
- evaluate the risks of disease within the livestock production systems, and design measures to mitigate these – i.e. risk analysis.

*A value chain approach to animal diseases risk management – Technical foundations and practical framework for field application (FAO, 2011)*, combines these two elements into a practical and useful approach to planning for disease prevention and control measures.

The value chain approach provides a framework for interdisciplinary collaboration to assess disease risk, identify hotspots and design animal disease management. This is done by assessing opportunities for disease transmission, risk reduction and compliance practices, and understanding the resources, incentives and capacities of stakeholders for disease risk management throughout the chain.

---

*Cyclical disease risk management*

If the focus of the intervention (e.g. determined in section 1.1) is solely on animal health, the value chain analysis should focus specifically on elements that are critical in disease risk management.
value chain. The analysis should also look at information, finance and knowledge flows, price determination, role of lead firms, and producer organizations, contracts and horizontal linkages.

One important point to be considered, relate to the rules and enforcement of the governance, considering also enabling environment. This involves identifying balance of power between actors and what are the driver behind (monopole, better access to information...), the formal and non-formal arrangements between actors (different forms of contractualisation), and if and how those relationships are enforced by legal framework, private standards or cultural norms (see Box 11).

The institutional setup incudes both formal and informal rules which govern the value chain actors and are a key in determining, through incentives and capacities, the level of efficiency of the chain, the distribution of benefits along it, and the gender role and empowerment of women and other vulnerable categories.

As an example (Veterinarians without Borders [VSF], 2012), among the different factors limiting empowerment of women pig farmers in Togo’s Kara region, the main constraint identified was that women were often not allowed to sell their animals without the approval of their husbands. Nor could they handle slaughtering activities, further limiting the value added they could capture by commercializing meat instead of live animals. Those issues were addressed through capacity building involving both men and women, and awareness raising towards community leaders and local authorities.

The governance structure also helps to identify leverage points for intervention, i.e. pinpoint nodes or lead firms, where intervention will have a multiplier effect due to business linkages and outreach.

As a value chain evolves it becomes more complex and relations between actors become closer as strengthened collaboration is necessary to ensure a reliable supply of quality products, in particular with regards to issues such as traceability or meeting food safety requirements.

Figure 13 depicts the spectrum of governance structures, with varying degrees of coordination. The market-based system is a loose one: transactions are simple – generally spot deals – with price as the defining factor. In that kind of system, small-scale livestock producers are disadvantaged in bargaining with traders since the latter tend to be better informed. This is especially true of pastoralists, whose mobility may limit their access to updated information on market prices (see Links 2009).

The balanced system has a tighter and more coordinated governance structure. Here the buyer also exerts more power but the producers are more organized, through collective action, for example.

The directed governance system usually entails contract mechanisms and partnerships, with small-scale producers supplying one or more buyers, who therefore have control over that particular market channel and its requirements. Embedded services are provided to small-scale producers, however, increasing the quantity and quality of their production.

Vertically integrated value chains are those where lead firms have strong influence across much of the value chain. For example, a poultry company may control all stages of a chain from production of parent stock and feed milling, to hatchery operations, fattening, slaughtering, right down to the retail outlets where the product is sold. This structure ensures product quality and reliability of supply as well as providing secure employment. However, there is little scope for small-scale producers, unless they are included in an outgrower scheme similar to the directed system.

---

2Lead firms (either in intermediary or final markets) are companies that determine the governance structures of the value chain, guided by rules and requirements which impact the access of small-scale producers to markets.
Figure 13. Coordination in the value chain range from market-based trading to intensely coordinated, vertically integrated production

Adapted from Gereffi et al., 2015
**Box 11. Lessons learned on governance of Kenyan poultry systems**

The Kenyan poultry industry comprise large and small scale producers commercializing commercial chicken or indigenous poultry. A value chain approach involving a series of focus group discussions and interviews with a variety of actors, including farmers, commercial companies, input sellers, processors, retailers and other intermediaries, illustrated the heterogeneity in the value chains in the poultry sector in Kenya. In term of governance and transaction rules for those value chains, different lessons could be learned.

- Small-scale farmers were rarely considered as dominant actors in the value chains, neither did they report existence of formal transaction rules, modalities and prices being eventually determined by brokers. When existing, farmer associations mostly handled marketing activities, allowing eventually to negotiate better prices. Lack of trust and communication was eventually reported as the reason for absence of farmer association in some areas.

- The integrated value chain involving broiler companies was described as governed by formal rules, with broiler farmers engaged through contract farming, for instance for day old chick or veterinary care provision, the broiler companies being identified as the dominant actor in the chain. The supply chain was submitted to government inspection regarding for instance bird movement permits and meat export certificates.

- Market actors identified as dominant groups not only brokers and broilers companies, but also the government sanitary inspectors and city council, as sanitary inspection were implemented as well fees were collected for waste collection and water supply. Trader associations were in place to negotiate marketing and administrative matters.

- Public policy and regulation appear to exist at various level of the value chain, mostly relative to hygiene, biosecurity and export permit, however there are rarely applied outside the more formalized chains and components.

In conclusion, it appeared that that there were large differences in structure, governance and regulation according to the value chains considered. Lack of policy making involving small producers and formalising the value chains, as well as strengthening associations beyond marketing roles was identified as critical point for challenge of food safety and poverty reduction of chicken small producers.

**Sources:**


It is important to understand that the governance structure is the key determinant of the benefits to small-scale livestock producers from participation in the market. That means:

- finding out how the value chain is coordinated, including key actors, firms and mechanisms (namely contracts, agreements, services), and determining the dynamics involved and why these relations and mechanism exists;
- exploring the formal and informal rules, regulations, and standards that influence the value chain, and what incentives exist to ensure compliance. How are regulations enforced? What rewards and sanctions are in place to ensure compliance?
- examining the effects of the governance structures (and rules and requirements) on livestock producers. What are the constraints (e.g. lack of information, lack of organization among producers, lack of capacity, etc.) that limit their participation?

Producer (farmer) organizations strengthen horizontal cooperation, providing an effective mechanism for empowering livestock producers and strengthening their participation and influence in the value chain. They help reduce transaction costs through economies of scale, increase bargaining power, and are a good leverage point for embedded services and capacity development. Similarly, on the meso and macro level, professional and industry associations further strengthen the organization of small-scale producers, and facilitate policy dialogue. This will be discussed further in section 4.2 on value chain development strategy.

3.3.3 Quantitative and economic analysis

The value chain map is used as a basis for analysis for planning and decision-making purposes. The map is complemented with information that can help to understand the current situation, assess future scenarios, and design interventions. Both quantitative analysis (developed in this section), as well as qualitative statements and analysis (described previously), are used to understand the value chain and develop the upgrading strategy.

The quantitative analysis can include a simple quantification of the value chain to understand concentration or distribution of main actors, employment, production volumes and market channels. More in-depth economic analysis entails analysing cost structures and pricing, calculating value addition and margins, and understanding the distribution of benefits among actors along the value chain. The information on margin and value addition can be used to motivate and provide incentives for small-scale producers. As with the qualitative analysis, users can also “zoom in” and focus on particular areas/bottlenecks along the value chain.

Quantitative analysis of the value chain

The quantitative analysis of the value chain serves a number of purposes:

- It allows the user to further understand the value chain and its dynamics. For example, at what stage is employment generation greatest, how many small-scale producers are producing
livestock and in what volumes as compared to commercial farms? Through what market channel is most of the product flowing – i.e. local markets or rural wholesale?

- It forms the basis for further analysis (e.g. competitiveness) of the value chain, of its economic efficiency and of the distribution of benefits (through margins and profitability analysis), etc.
- It allows the user to identify both leverage points for intervention, and/or problem areas at particular stages of the chain that may require further analysis.
- It provides baseline data for monitoring and evaluation purposes.

Quantification of the value chain map offers both a static depiction of the current status quo (see Figure 14), as well as a dynamic depiction of the value chain through trends and growth rates at each chain link. Examples include:

- numbers of small-scale livestock producers, pastoralists and commercial farms (data to be gender-disaggregated where possible);
- employment along the value chain (data to be gender-disaggregated where possible);
- output value (see Tip 2) and volumes (factoring in food losses and waste);
- percentage of volumes flowing through each channel;
- prices paid for products at each stage of the chain;
- growth rates in production volumes over time for each stage of the chain.

**Figure 14. Quantification of the camel milk value chain in northern Saudi Arabia**

Adapted from Faye et al. 2014
Economic analysis

The economic analysis looks at the economic efficiency of the chain. This can include an analysis of the value added, costs, profits and margin distribution across the chain, as well as capacities and productivity. The user should note that quantitative analysis is not a static, but, on the contrary, a dynamic process with variations depending on factors such as seasonality. Furthermore, the economic performance of a chain can be benchmarked when looking at competing chains for export markets (GIZ, 2016), and at average industry performance and cross-industry benchmarks.

- Value Added

The calculation of value added is central to the value chain framework and consists in the measurement of wealth created in the value chain. The main objective of the value chain is to effectively capture value in the end-market, thereby generating increased profits.

Value added can be calculated for the overall value chain, or broken down into value added for each actor and at each stage of the chain. Value can be added to a livestock product in various ways, from processing intermediate products to transporting them (and hence increasing their value over space) as well as storing them (creating value over time).

The value added elaborated in the Sustainable Food Value Chain framework, has five components (employee salaries, net profit for asset owners, taxes, consumer surplus, positive or negative externalities), as shown in Section 1, Figure 5. On an operational level, the externalities, consumer surplus and tax revenues, may be more difficult to factor into calculations in less formal economies.

Important is the distribution of the value added (relative to the price and turnover of goods in comparison to the input provided). In Figure 15, for example, even though it appears that producers capture the highest share of value added, the reality is that collectors and retailers together capture in one day the equivalent of what producers capture in five months, with minimal inputs compared to producers.
Figure 15. The distribution of value added (cost in Riels per 1.5 Kg chicken) along a chicken value chain in Cambodia

Adapted from Heifer International, Cambodia

When analysing value added in sector development strategies, it is important to capture a large percentage of the total value added in-country or in-region, and ensure an equitable distribution of these benefits. It is also important to understand value creation along the value chain and design interventions accordingly, for example by reducing costs, increasing quality and hence prices, etc.

In Cambodia and Viet Nam, for example, a project aimed at improving pig meat marketing chains through strengthened producer cooperatives sought to enhance pig quality through swine breeds, feed supplements and collective purchasing. This resulted in higher-value contracts and hence greater value added captured by small-scale producers (Agropolis, 2010).

Production costs can also be brought down for small-scale producers if they grow their own forage, thus saving on feed purchases and capturing more of the value added of their products.
Box 12. Food loss and waste

When comparing developed and developing countries, food losses generally occur at the stages before consumption in the latter countries (FAO, 2011). This is especially true for the dairy sector (with losses running at 20-25 percent in developing regions), where by far the greatest losses occur at the local and aggregation/distribution stages, frequently because of the absence of a proper cold chain. Much food is also lost at the animal production stage. The meat industry is estimated to account for more than half of the 30 percent total food losses in sub-Saharan Africa.

In a given value chain, once food losses are identified as an issue, it is useful to quantify them at different stages of the value chain and target interventions accordingly.

For example, a study on a dairy cattle milk supply chain in Turkey helped quantify losses at each point of the chain and identify the main causes. Greatest losses occurred at the production stage, with animal disease, due to poor health practices in small family farms, being the main factor responsible.

<table>
<thead>
<tr>
<th>Stage in the supply chain</th>
<th>Losses and waste</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Agricultural production | 10%              | Animal diseases  
|                           |                  | Poor barn conditions  
|                           |                  | Uninformed feeding practices in small-scale enterprises  
|                           |                  | Mastitis, which in turn derives from uninformed operation of milking machines  
|                           |                  | Uninformed milking practices |
| Storage                   | 1%               | Improper cooling tanks  
|                           |                  | Not using milk cooling tanks to avoid high energy costs  
|                           |                  | Not observing cold chain rules during transportation  
|                           |                  | Transport over long distances |
| Processing and packaging  | 1.5%             | Losses from not using whey from processing in small-scale enterprises  
|                           |                  | Losses emerging from failures in filling/packing machines |
| Distribution              | 6%               | Losses from not observing cold chain rules |
| Consumption               | 1.5%             | UHT milk and white cheese suffer the most waste due to improper storage and conservation |
| Total                     | 20%              | |

**Production costs, profit margins**

While value-added analysis looks at the value chain from a macroeconomic perspective, and includes aspects such as taxes and externalities, an economic analyses of production costs, profits and margins focuses more on the direct operations of the value chain actors and the distribution of income and margins along the chain. This affects the VC’s overall competitiveness, and, like value added, allows the user to look at distribution along the segments of the chain.

- The **cost calculations** include both variable and fixed costs. Variable costs include the cost of improved breeds, feed, veterinary drugs, hired labour, and machinery; whereas fixed costs include rent, interest and other financing charges, administrative costs etc. Other costs may include for instance transaction costs and regulatory costs (e.g. business registration). Cost calculations allow users to understand the cost structure and drivers (e.g. food losses, underused capacity), and address production efficiencies and cost reductions.

- This information can also be used in benchmarking, and to compare the cost structure of the (sub)sector with those of direct competitors.

---

**Tip 2. Output value**

In the livestock sector, as with other agricultural sectors, the products generated as outputs include:

- value of products sold to the market(s);
- value of products consumed (own final consumption) or gifted;
- value of stock of products (inventory) for future sale or own consumption at the end of the period, net of stock at the beginning (change in inventory).

To calculate the total output value, all three values should be considered to determine how much is actually produced over a period. Looking only at sales is not enough.

---

- **Profit margins** look at the price per unit and the related cost structure to calculate the margin distribution along a value chain. For example, in Figure 16 the profit margins are distributed, through a cost gross margin analysis, as a percentage of the retail price of the product. Net profit also considers other non-operating expenses such as one-time veterinary costs. The example highlighted in Figure 16 provide a distribution of profits among producers, traders and retailers.
Other economic analyses include:

- **Productivity** looks at the efficiency of utilizing resources (factors of production such as land, pastures, fodder/forage, labour, etc.) in the production process. Productivity analysis can also measure one production system (e.g. grazing and foraging livestock) and compare it to another (e.g. zero-grazing). Productivity can further be used when benchmarking against competing value chains.

- **Pre- and post-harvest losses and waste** factors in the wastage and losses experienced along the different stages of the value chain. This helps understand where the losses take place and design appropriate strategies.

- **Benchmarking** compares the selected value chain with an industry average or competitor’s best practice to help identify development needs and potential. It can be established for numerous economic parameters (productivity, production capacity, costs structure, growth rates, investment) as well as qualitative factors such as technology and innovation, research, staff training, existence of market regulations and sanitary and phytosanitary standards, etc.

- **Transaction cost analysis** focus on the costs occurring in the marketing process, i.e. information costs (cost of searching marketing options), negotiating costs, or monitoring and enforcement costs. Transaction cost may be indeed considered as an important factor to be considered by small-scale producers when deciding on specific marketing channels (De Bruyn et al., 2011; Ndoro 2015)

- **Cost-benefit analysis** is a very useful tool for reaching decisions, evaluating trade-offs, and understanding certain aspects of the value chain, e.g. the cost-benefit of various production systems. Such analyses can be kept simple, or can be complex and comprehensive, capturing, for example, economic, social and environmental benefits (e.g. respectively, income, nutrition and contribution to ecosystem services) and factoring in livestock diseases and pests as an important externality cost to communities and countries. Cost-benefit analyses can also be used
to evaluate different intervention options in the design of development strategies.

An important aspect of the dairy sector lies in the fact that it is a regular source of cash (daily to every two weeks). In contrast, in crop systems farmers generally get paid after their harvest is in. Milk production therefore helps diversify income and stimulates cash flow (Ngongomi et al., 2006).

**Box 13. HACCP in livestock value chains**

The Hazard Analysis Critical Control Point (HACCP), an approach developed to ensure hygiene and food safety, deals with the identification, evaluation, and control of biological, chemical, and physical hazards throughout the food production chain. It is based on seven principles:

- 1. Identify the potential hazards associated with food production at all stages, from growth, processing, manufacture and distribution to the point of consumption. Assess the likelihood of occurrence of the hazards (risk assessment) and identify preventive measures for their control (risk management).
- 2. Determine the points, procedures and operational steps that can be controlled to eliminate the hazards or minimize their likelihood of occurrence; these are the critical control points (CCPs).
- 3. Establish critical limits which must be met to ensure that the CCPs are under control.
- 4. Establish a system to monitor control of CCPs.
- 5. Establish corrective action to be taken.
- 6. Establish verification procedures.
- 7. Establish documentation concerning all procedures and records appropriate to these principles and their application.

HACCP systems rely on certification provided by an independent certifying body, which ensure that adequate procedures are applied to guarantee food safety along the chain. Compliance is mandatory in most export markets.

Food safety and hygiene are important concerns for livestock products, especially in developing countries, in the areas of transport, slaughtering, cold chains and zoonotic risks. Also, HACCP can easily be applied alongside a VC analysis, as it has similar requirements in term of the characterization of activities and stakeholders along the chain, as well as interventions to be implemented (development of a legal framework, capacity building, etc.). The HACCP approach is therefore of particular relevance to livestock value chain projects focusing on food safety.

3.3.4 Sustainability

Sustainability is clearly central to the SFVC concept, addressing all three of its dimensions (economic, social and environmental). Sustainability of the value chain and its interventions must be approached in a holistic manner throughout value chain development. The three dimensions are reinforcing: for example, environmental sustainability is essential in order to ensure a sector’s long-term competitiveness and economic growth. However, trade-offs between the dimensions also need to be considered. For instance, whereas the development of livestock activities generally has an impact in terms of greenhouse gas emissions and carbon footprint, an integrated farming system is more environmentally friendly. Another example concerns the use of antimicrobials, which, while beneficial to human and animal health, also involves a risk of promoting drug-resistant pathogens. Various tools are available to evaluate the performance of value chains in terms of sustainability, especially on the environmental side. They include Life Cycle Assessment, which calculates the environmental impacts associated with all the stages of a product’s life (see Annex 2).

- **Economic sustainability.** A value chain needs to be commercially viable, competitive, and with potential for growth in order to ensure sustainable economic impacts, such as increased income, employment, taxes and food supply. Factors that contribute to economic sustainability include:
  - growth forecasts in the end-market;
  - entering new markets and/or niche markets;
  - competitiveness of the value chain relative to rivals and possible substitutes;
  - successful branding of the product;
  - jobs creation.

It can be also helpful to consider how livestock contribute to producers’ economic sustainability through:

- their role as a financial asset that can be converted into other valuable commodities when needed, or used as collateral for finance;
- the fact that, in mixed production systems, livestock can contribute to farmers’ economic (and environmental) resilience through diversification of activities and livelihoods.

- **Social sustainability.** For the value chain to be socially sustainable, and to ensure that economic growth is inclusive, equitable, and has positive social impacts, the following factors need to be considered:
  - inclusiveness of growth;
  - equitable distributions of benefits;
  - right to food, food security and nutrition;
  - empowerment of women, young people and disadvantaged groups;
  - resolution of potential conflicts, including land tenure issues and time poverty due to increased workload;
  - promotion of workers’ rights and occupational safety and health;
  - promotion of animal welfare.
Environmental sustainability. The growth of the livestock sector should take place without depleting natural resources. Livestock production systems tend to interact strongly with their environment at different scales:

- Livestock externalities may have different negative impacts on their environment (water, land, soil, air and biodiversity degradation).
- The livestock sector is estimated to produce 14.5 percent of global greenhouse gas emissions. On the other hand, livestock systems make use of a significant amount of foods that are inedible for humans.
- Livestock production may be affected by increased extreme climatic events (droughts, floods, etc.), changes in feed and water availability and the emergence of new zoonotic diseases.
- Livestock provide important and diverse ecosystem services (see Box 17). Some ecosystem services can be linked to social or economic sustainability.

---

Box 14. Gender considerations

Recognizing the gender differences that exist in the livestock sector is critical in designing upgrading strategies that effectively reflecting differentiated roles and dynamics, and dealing with the challenges stemming therefrom. Gender-based constraints (GBCs) can be defined as “restrictions on men’s or women’s access to resources or opportunities that are based on their gender roles or responsibilities” (USAID, 2009). These constraints may regard lack of access to financial services, or specific gender-differentiated roles within the sector. For example, in sub-Saharan Africa, milking is traditionally the responsibility of women, whereas selling or slaughtering dairy livestock is undertaken by men.

Two guidelines, *Understanding and Integrating Gender Issues into Livestock Projects and Programmes: a Checklist for Practitioners (FAO 2013)* and *Developing Gender-Sensitive Value Chains – A Guiding Framework (FAO 2016a)*, have been developed to identify and analyse GBCs, thus enabling VC practitioners to resolve inefficiencies related to gender inequalities and discrimination, thus enhancing the sustainability of interventions.
The above factors need to be taken into account in the value chain analysis, while the following aspects also need to be investigated:

- positive or negative impact of VC activities on the environment, i.e. input production, trade, livestock production, processing. Impacts may include pollution of water resources, land and soil degradation, interaction (positive or negative) with wildlife, but also maintenance of pastoral areas and supply of fertilizers for crop production;
- short and long-term access to environmental resources by VC actors;
- participation of livestock in recycling of waste and crop residues;

**Box 15. Climate-smart livestock value chains**

Climate smart agriculture (CSA) is an approach that aims to address food security and climate change by: (i) sustainably increasing agricultural productivity and incomes; (ii) adapting and building resilience to climate change; and (iii) reducing and/or removing greenhouse gas emissions where possible. The livestock sector offers substantial potential for climate change mitigation and adaptation, and different interventions can be considered, both at the production stage and along value chains.

At the production stage:

- improved resources management (water, land, feed, etc.);
- optimization of grazing by balancing and adapting grazing pressures on land (improved carbon sequestration and lower carbon emissions);
- improved waste management (e.g. storage and use of manure as an energy source);
- adapted breeding to use more efficient animals relative to carbon emissions and/or animals that are tolerant to heat and poor nutrition, but also to parasites and diseases;
- improved herd management, disease control and feeding strategies;
- diversification of activities and integrated management.

Along value chains:

- reduce dependency on inputs (feed, vaccines, etc.);
- reduce food losses and waste at the different VC stages (e.g. transport, storage, packaging, and retailing);
- reduce GHG emissions related to transport (local consumption);
- match supply with demand (i.e. reduce oversupply) and improve market access.

In general, the main barriers to adoption of CSA practices relate to a lack of information, limited access to technology and insufficient capital. Overcoming those barriers thus requires interventions involving capacity building and extension work, as well as appropriate financing mechanisms.

✓ vulnerability and potential resilience of the value chain towards extreme climatic events (droughts, floods, etc.);
✓ geographically-specific environmental values and their potential interactions with livestock activities;
✓ specific adaptive capacities of local breeds.

Box 16. Land tenure issues

Most livestock systems, especially pastoral ones, rely on land for grazing, feed production and herd movements. In order to address the uncertainty and heterogeneity of land resources, small-scale producers seek common solutions such as herd mobility or communal tenure practices.

However, there are numerous challenges regarding land tenure, such as conflicting interests over the use of land and related resources. They include lack of integrated land-use planning at different scales, weak institutional relations between states and pastoral communities, absence of participation mechanisms for pastoralists, and absence of a legal framework for pastoralism.

In the context of value chain development, land tenure and access to land are important issues in non-pastoral as well as pastoral areas. Since land availability often determines feed availability, problems concerning land access may limit production by small-scale herders.

It is important to determine to what extent land access constrains livestock production. Aspects to be examined include: the governance of organized rangelands; local and communal practices; relevant land policies, land-user rights; and the delineation and protection of rangelands. Other aspects may emerge in relation to existence of protected areas or to the access of women or landless people to grazing areas.

For further details please see:

3.3.5 Market Systems Analysis

A value chain is made up of multiple market systems (intermediary markets, input markets, financial markets, other service markets), each with: (1) support functions and (2) informal and formal rules, determined by the enabling environment and governance structure. Figure 17 shows the constraints identified in the support functions and rules (governance and enabling environment) of a dairy core value chain that can be analysed for a specific market system (Figure 18).
As the core market is connected to the support markets and the enabling environment, the underlying cause of a problem in the core market may lie in one of the subsystems. Market systems analysis enables us to look at both core markets and subsystems to identify the root cause of any challenge.

Hence, intervening in the core value chain, for example to improve the chain’s performance or efficiency, may have a limited effect unless related market inefficiencies are also addressed.

In the dairy value chain in Figure 17, the problem of limited milk supply could be resolved by improving smallholder productivity. This could be done by bringing in better breeding stock, for instance. But then input markets issues would also have to be tackled (e.g. by improving feed supply) to enable high-productivity dairy crossbreds to express their full genetic potential. The point is that isolated interventions only have limited, or even negative effects, in terms of costs/revenues.

Market system analysis also helps users to identify points for leverage in the system. This involves targeting points that can bring broad change to the value chain as a whole. These can be tangible, such as organizational nodes (e.g. producer associations), or intangible, such as economic incentives, (e.g. payment of a premium for improved milk quality).

Also important is to determine the relations and interdependence between constraints, and then prioritizing and sequencing them.

Adapted from Kitaw et al., 2012
This means that in the previous example, in order to fix the issue of limited milk supply, feed improvement should take place before any attempt at breed improvement, specifically considering the feed market system (Figure 18).

**Figure 18. Targeted market system analysis of feed provision to address inefficiencies in support markets**

### 3.3.6 Strategic analysis

A strategic analysis of the value chain entails conducting a SWOT analysis of the entire chain, or of one or more segment, to assess the chain’s internal strengths and weaknesses, and the external opportunities and threats which bear on its competitive advantage and its potential for sustainable, inclusive growth. Table 6 sets out the framework to be used, and Table 7 provides an example of a SWOT analysis.
Table 6. The SWOT analysis framework

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key internal resources and capacities, which give the value chain its</td>
<td>Lack of key internal resources and capacities, such as technical expertise,</td>
</tr>
<tr>
<td>competitive advantage, such as availability of quality raw materials,</td>
<td>road access, veterinary support. For instance:</td>
</tr>
<tr>
<td>proximity to markets, particular skill sets. For instance:</td>
<td>• Insufficient reputation, presence and reach</td>
</tr>
<tr>
<td>• USP's (unique selling points)</td>
<td>• Limited financing</td>
</tr>
<tr>
<td>• Resources, Assets, People</td>
<td>• Own known vulnerabilities</td>
</tr>
<tr>
<td>• Experience, knowledge, data</td>
<td>• Timescales, deadlines and pressures</td>
</tr>
<tr>
<td>• Financial reserves, likely returns</td>
<td>• Cash flow, start-up cash-drain</td>
</tr>
<tr>
<td>• Marketing – reach, distribution, awareness</td>
<td>• Continuity, supply chain robustness</td>
</tr>
<tr>
<td>• Innovative aspects</td>
<td>• Effects on core activities, distraction</td>
</tr>
<tr>
<td>• Location</td>
<td>• Reliability of data, plan predictability</td>
</tr>
<tr>
<td>• Price, value, quality</td>
<td>• Morale, commitment, leadership</td>
</tr>
<tr>
<td>• Accreditations, qualifications, certifications</td>
<td>• Accreditations</td>
</tr>
<tr>
<td>• Processes, systems, IT, communications</td>
<td>• Processes and systems</td>
</tr>
<tr>
<td>• Cultural, attitudinal, behavioural</td>
<td>• Absence of cold chains</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors external to the value chain that represent a threat to profits</td>
<td>Factors external to the value chain can be</td>
</tr>
<tr>
<td>and growth. For instance:</td>
<td>opportunities for profit and growth, such as an emerging niche market or</td>
</tr>
<tr>
<td>• Political effects/Legislative effects</td>
<td>interested lead firm(s).</td>
</tr>
<tr>
<td>• Environmental effects</td>
<td>For instance:</td>
</tr>
<tr>
<td>• IT developments/Competitors’ intentions</td>
<td>• Market developments/Competitors’ vulnerabilities</td>
</tr>
<tr>
<td>• Market demand</td>
<td>• Industry or lifestyle trends</td>
</tr>
<tr>
<td>• Competitors and potential substitutes</td>
<td>• Technology development and innovation</td>
</tr>
<tr>
<td>• New technologies, services, ideas</td>
<td>• Global, regional and local influences</td>
</tr>
<tr>
<td>• Vital contracts and partners</td>
<td>• New markets, vertical, horizontal</td>
</tr>
<tr>
<td>• Sustaining internal capabilities</td>
<td>• New Unique Selling Point's</td>
</tr>
<tr>
<td>• Loss of key staff</td>
<td>• Tactics – surprise, major contracts, etc.</td>
</tr>
<tr>
<td>• Sustainable financial backing</td>
<td>• Business and product development</td>
</tr>
<tr>
<td>• Economy – home, international</td>
<td>• Information and research</td>
</tr>
<tr>
<td></td>
<td>• Partnerships, agencies, distribution</td>
</tr>
</tbody>
</table>

In practice, SWOT analysis should be subdivided according to the issues considered relevant to the VC analysis. It may include elements of the extended value chain and enabling environment (production, processing, marketing, policy) as in the example in Table 7, and/or consider thematic issues specific to the focus of the project (quality, nutrition, climate, gender and minorities, animal breeding, feed, food safety).
Table 7. Example of a SWOT analysis for a Tanzanian dairy value chain

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production issues</strong></td>
<td><strong>General issues</strong></td>
</tr>
<tr>
<td>− Keeping animals is a traditional activity in Tanzania, people receive no specific training</td>
<td>− There is no proper vision for VC development</td>
</tr>
<tr>
<td>− Land for dairy production is available in many parts of Tanzania</td>
<td>− Lack of investment along the entire value chain</td>
</tr>
<tr>
<td>− The number of animals is high, third-highest in Africa</td>
<td>− Poor VC management and coordination</td>
</tr>
<tr>
<td>− Some parts of the country are excellent for dairy production, e.g. in Tanga, there is good rain all year round and enough grass available</td>
<td>− No clear division of roles along the chain, too much integration by actors</td>
</tr>
<tr>
<td>− Producers have assured regular incomes throughout the year although margins are small</td>
<td>− Too many actors in the chain</td>
</tr>
<tr>
<td>− Powerful tool for rural development as incomes can be generated in poorer parts of society on a regular basis in most of the country</td>
<td><strong>Production issues</strong></td>
</tr>
<tr>
<td><strong>Marketing issues</strong></td>
<td>− Inability to absorb all milk during peak production</td>
</tr>
<tr>
<td>− Huge market for dairy products in Tanzania and in the region</td>
<td>− Feed costs are very high in intensive husbandry systems, lowering milk profits</td>
</tr>
<tr>
<td>− Consumer awareness is high in some parts of the country</td>
<td><strong>Processing issues</strong></td>
</tr>
<tr>
<td><strong>Quality issues</strong></td>
<td>− Low storage capacity in the market in Dar es Salaam</td>
</tr>
<tr>
<td>− Exceptional nutritional value of milk for food security</td>
<td>− Qualified dairy specialists and technicians not available</td>
</tr>
<tr>
<td><strong>Policy issues</strong></td>
<td>− Poor milk collection systems, few cold chains</td>
</tr>
<tr>
<td>− There is political will to support agriculture in general</td>
<td>− No suppliers of dairy equipment and packaging materials in Tanzania</td>
</tr>
<tr>
<td></td>
<td><strong>Marketing issues</strong></td>
</tr>
<tr>
<td></td>
<td>− Population not educated to the value of milk</td>
</tr>
<tr>
<td></td>
<td>− No promotion of dairy products undertaken</td>
</tr>
<tr>
<td></td>
<td>− Market access for producers is poor</td>
</tr>
<tr>
<td></td>
<td>− Local market not supplied sufficiently</td>
</tr>
<tr>
<td></td>
<td>− Tanzanian consumers prefer imported products</td>
</tr>
<tr>
<td></td>
<td>− Low consumption of dairy products in Tanzania</td>
</tr>
<tr>
<td>Quality issues</td>
<td>Policy issues</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>− Hawkers adulterate milk and sell at the same price as processed milk</td>
<td>− Double standards, processors are controlled by authorities, but the black market is not</td>
</tr>
<tr>
<td>− No approved milk containers are available for traders of raw milk</td>
<td></td>
</tr>
</tbody>
</table>

**Threats**

**Production issues**

− Genetic erosion of current dairy animals, and, despite efforts, the breed is not improving

− Dairy research is not well developed in Tanzania and past successes have almost disappeared

− High input prices

− Kenyan milk collectors inflate prices and limit supplies

**Processing issues**

− At present prices, processors cannot compete with hawkers

− High input prices

**Marketing issues**

− Imports of finished products are often cheaper than locally produced items

− Consumption habits have changed, milk is no longer seen as an essential commodity

**Policy issues**

− Government does not see dairy as a priority sector

− Too many regulatory bodies dealing with dairy sector

**Opportunities**

**General issues**

− Dairy sector has a huge potential for regional development

− Milk is important for food security

− Many dairy sector supporters are stepping up

**Production issues**

− Interest in investment in animal feeds factories is growing

**Processing issues**

− Making high-value products with longer shelf life

**Marketing issues**

− High demand for dairy products

− School programmes promote milk consumption

− Institutional market is growing

**Policy issues**

− Political will through the “Kilimo Kwanza” agricultural transformation policy

*Adapted from Dillman and Ijumba, 2011*
The strategic analysis should also capture the **dynamics** of the value chain and factors that influence it. This can include changes in the end-market, such as consumer preferences and market demand, or changes in the flow of the value chain, such as technology and innovation, lead firm behaviour, new services or inputs, and overall rules and regulations. Capturing these dynamics is important in order to understand the adaptability of the value chain and its strategic implications.
E. Step 4. Vision and Development Strategy

This step provides practical guidance on formulating a specific and realistic vision, and articulating a value chain development strategy and action plan together with key stakeholders and partners. The value chain development strategy maps out the overall “game plan” addressing the root causes of why value chain actors and partners do not (lack of incentives) or cannot (lack of capacities) take advantage of market opportunities. The strategy includes interventions in the core value chain (value chain development) as well as in support functions and the enabling environment (value chain promotion). Integral to the action plan strategy is how to achieve the vision and the strategy together with the partners responsible for implementation and financing. It is critical to define a clear exit strategy from the onset, including funding sources.

As a first step, the analysis performed in Step 3 should help identify the goals to be realized (vision) and to prioritize the key constraints to be resolved in order to achieve those goals (strategy), identifying leverage points and activities that address both the capacities and incentives of value chain actors. Formulation of the vision and strategy is bound by the programme context (e.g. focus of programme, resources available, etc.).

Based on the opportunities identified, the vision is then defined. Key objectives and the approach for achieving the vision are specified in the strategy. The action plan operationalizes both vision and strategy, and breaks down the individual components whereby the value chain actors, facilitated by the programme, are to realize them. Identifying suitable political and implementing partners is central to the sustainability of interventions and ownership of the process. The M&E system keeps track of project performance to ensure that the intended objectives and vision are achieved.

Who should get involved?

The vision and development strategy require to be discussed and validated by a panel of person representing the different people and organisations involved in each step of the extended value chains (from producers to consumers, including service providers) and in the enabling environment (e.g. policy makers).

4.1 Vision and strategic objectives

Based on the programme context and value chain diagnosis (see Chapter 3), the first step should be defining and agreeing on the vision of the state of the value chain to be achieved by a determined time in the future. Further, the development strategy should be designed for the selected value chain to achieve this vision. It provides the strategic direction for the value chain development, in consensus with key value chain actors and partners.

In formulating the vision, one should:

- select a time perspective: how should the value chain be in five years’ time?
- be brief: one paragraph statement, if possible;
- be realistic as to what can be achieved in the time fixed;
- be sustainable and include economic, social and environmental impacts;
- follow overall programme objectives and focus.
It is very important that the vision is developed and validated with the strategic and relevant value chain stakeholders from the core value chain and support functions, as well as from the enabling environment. It is necessary to involve both strategic political partners and value chain actors in order to ensure not only that the business objectives are incorporated, but also that the political elements are included.

Although the programme may have varying objectives, the vision should always address core value chain needs, such as improving competitiveness and profitability, while also considering the three development dimensions. It is only with competitiveness and growth in the sector (the core objective), that the other dimensions (e.g. ensuring that the value chain is more inclusive and sustainable) can be achieved.

This is how CGIAR (2016) defines its vision for a small ruminant value chains in Ethiopia:

“By 2023, people in Ethiopia benefit from equitable, sustainable and efficient sheep and goat value chains: their animals are more productive, livestock markets work for producers, consumers and business, there are more affordable and healthier small ruminant products, and the livelihoods and capacities of people involved in the whole chain are improved.”

A vision statement is followed by core value chain objectives, such as improved competitiveness through product differentiation, cost reduction and new market channels. Also specified are development objectives such as access to markets for the poor, inclusive growth, and climate resilience and sustainability.

Strategic objectives should be as concrete and precise as possible, and eventually provide quantification in term of targets: e.g. values and volumes to be reached, employment to be created. They will be determined in accordance with the development strategy or strategies chosen. Box 19 in section 5 gives an example of how vision, development strategy, and action plans can be articulated in a specific case.

4.2 Development Strategy

The development strategy defines the “game plan” for how the value chain actors, facilitated by the programme, achieve the objectives set out in the vision. When designing the strategy, one or more of the following four development pathways are to be considered (adapted from Microlinks, 2010):

1. Process upgrading: upgrading the process of livestock production to make it more efficient, and hence reducing costs, either through improved capacity, innovation and technologies or through improved support markets, especially input markets. This will boost the competitiveness and hence profitability of the chain as a whole and of the individual value chain actors.

   For instance, increased production (e.g. through improved feeding and genetics), or food loss reduction (through more efficient transport and refrigeration of products) constitute typical process upgrading strategies.

2. Product upgrading: upgrading of the livestock product itself, through improved quality and greater value added. This can include promoting the processing of livestock products, or compliance to standards and regulations such as HACCP or organic production. This will improve the added value, competitiveness and hence profitability of the whole chain and of the individual value chain actors.
For example, product upgrading strategies may aim at improving the sanitary quality of a product, or at processing it into alternative products (e.g. transformation of milk into cheese or other dairy products).

3. Functional upgrading: this involves actors in the value chain capturing more added value by moving up along the value chain into production or distribution; or companies securing their supply chain, due to stringent market requirements and standards, and integrating downstream production. This improves the governance structure and business linkages in the chain, the competitiveness and hence profitability of the chain as a whole, and that of the individual value chain actors.

For example, small-scale producers may decide to handle some functions of the value chain (slaughtering, or distribution) to gain more direct access to local markets and capture more of the total value added of the product.

It must be stressed that middlemen and traders may play a critical role in providing small-scale producers with access to markets, market information and even finance. A strategy that excludes them from the value chain must be considered carefully.

4. Market upgrading: allowing value chain actors accessing new markets and/or new market channels for the same product or improved products. Market upgrading includes both market penetration (deeper outreach) and diversification (entry into new markets).

For example, a value chain may seek to access a specific urban, export or organic market.

The above elements are not mutually exclusive and, for example, market upgrading usually takes place together with process and product upgrading to meet the demands of a new market.

The development strategy defines the overall approach and set of core components to be considered to achieve the vision. A more detailed action plan which breaks down the different components into tasks and activities will be developed subsequently (Step 5).

Important factors to consider when defining sector strategy in the action plan include:

1. **Market orientation.** The strategy should provide market-based, commercially viable solutions to: (i) promote the sustainable growth of the value chain; and (ii) address market failures limiting the growth and competitiveness of small-scale producers and micro/small/medium enterprises. This ensures that interventions are demand-driven and result in sustainable (behavioural) change after project facilitation and funding end.

   For example, a World Bank project supported private livestock input providers (feed, etc.) in Ethiopia by: (i) stimulating demand through awareness raising of improved inputs, resulting in improved productivity; (ii) improving sales networks of private companies in remote rural areas; (iii) providing appropriate credit facilities. Provision of improved, quality inputs by the private sector makes up for limited supplies from weak government extension services.

2. **Comprehensive approach.** The development strategy should consist of individual interconnected development strategies along the different stages of the value chain and at its different levels (core value chain, support functions and enabling environment). These address the constraints that prevent the value chain and its actors from reaching their potential. In order to achieve the vision, all identified and prioritized constraints must be addressed. Furthermore,
Interventions need to be sequenced correctly so that they can build on the outcomes of other interventions.

For example, strategies aimed at reaching a given market may first require the value chain to have met market requisites in terms of traceability and food safety standards.

3. **Integrating an inclusive approach.** The strategy should consider the potential differences in terms of capacity and needs among targeted actors, such as women and men, ethnic and religious groups, and age cohorts. Actors may require interventions tailored to their specific needs (see Box 18).
4. **Quick wins.** The strategy should include a combination of long- to-medium- and short-term interventions and solutions. This includes identification of quick wins and “low hanging fruit” – intervention opportunities that can be implemented quickly. Wins are important for projects to gain momentum and the confidence of value chain actors, especially buyers and political partners. These “value for money” options should be identified and pursued at the beginning of the interventions.

For example, classical quick win interventions in livestock may include supporting easily adoptable practices, such as salt-lick blocks for improved feeding, phone-based market...
information services to actors, or regular vaccination and deworming campaigns (providing such campaigns take place on an ongoing basis).

5. **Leverage points.** The strategy should focus on leverage points to ensure maximum intervention impact. Leverage points can be actors in the value chain such as lead firms, which have large influence on the growth and structure of the value chain; organizational nodes such as small-scale livestock producer organizations; and/or social structures, such as cooperating with village heads, and gaining the respect and trust of the community.

Additional leverage points are linked to the programme’s scaling up strategy, in which partners with a wide presence (geographically, or to other value chains and sectors) and impact on the economy are selected.

For example, working with business development services on business models for providing sanitary and phytosanitary standards to micro/small/medium enterprises processors has greater outreach than working directly with the processors themselves: these services also work with processors in other geographical areas, and with other value chains and subsectors.

6. **Trade-offs and linkages.** Furthermore, value chain development strategy should take an inter-sectoral (inter-value chain) approach where relevant, as small-scale livestock farmers usually tend to produce both agricultural and livestock products in mixed crop-livestock systems. As the farming systems are integrated, the value chain development strategy needs to consider the relations between the various stages of production and marketing in the value chain network, and the opportunity costs and trade-offs between different productions. Off-farm considerations and employment opportunities should also be integrated.

For example, in mixed crop-livestock systems, there has to be some trade-off when considering the use of crop residues either as a feed source or as soil amendment.

Though the analysis forms the basis for the design of both the strategy and the action plan, other constraints and bottlenecks will arise during implementation. Monitoring and Evaluation, described in the next steps, is therefore crucial in identifying these new/unexpected hurdles, which will need to be incorporated into the strategy and action plan. Project design, as well as implementers and donors, should therefore be flexible enough to incorporate both new opportunities and challenges as they arise.
F. Step 5. Design and implementation

5.1 Action plan

The action plan describes how the strategy is to be implemented and breaks down the various components in terms of what, how, when, who (and where). This can include interventions in: (i) the core value chain; (ii) support markets; and (iii) the enabling environment (e.g. policies, regulations, institutions building, etc.).

The action plan provides the details of the implementation and includes:

1. **What?** Detailed description of the specific intervention (broken down into sequenced activities).
2. **How?** What tools and methods are to be used to implement those activities (e.g. technical experts [internal and external], workshops, infrastructure, etc.)?
3. **Milestones and (sub)indicators.** What are the direct results of the activities and how are they measured?
4. **When?** When will the activities be implemented and when results/milestones are to be achieved?
5. **Who?** Who will lead the implementation, and who are implementing partners (see below)?
6. **How much?** What are the costs of the different activities (e.g. workshops, travel, workdays (technical), infrastructure, etc.)?

Who should get involved?

Once the action plan decided, some of the partners that should have beforehand endorsed the development strategy, are expected to take responsibilities in the implementation of interventions (see Section 5.2). These actors can be either actors from the extended value chain or strategic/political partners (enabling environment).
Figure 19. Possible intervention components in a value chain

Figure 19 shows the possible components of intervention at each stage of the value chain from governance and business linkages through to advocacy, policy and regulations. In order to highlight which part of the value chain the components address, it is useful to visually superimpose the components over the value chain mapping (ensuring the map is still evident underneath). This will enable the audience (strategic partners, implementers, etc.) to understand which function of the value chain is being targeted, who the responsible actor/s for that function are, and the business linkages involved.

When designing intervention areas, as highlighted in Figure 16 by the example marked in red “Improving processing and value addition of livestock products”, these will usually comprise components of intervention (in blue) for the core value chain, support functions and enabling environment.

The intervention area in Figure 19, with its various components, is drawn from a 2012 East Africa Farmers’ Federation (EAFF) project promoting value addition practices for livestock products in Kenya and Uganda. The intervention area includes: (i) core value chain activities: strengthening producer organizations (governance); providing capacity building and improving value addition practices and technology; (ii) support functions: capacity building to conduct training in hygiene and handling of meat and other livestock products (standards and certification); development of cold chain and suitable transport (services); investment promotion (services and business linkages); suitable financial facilities...
(finance); and (iii) enabling environment: building of slaughterhouses (infrastructure); establishing a suitable policy framework to promote value addition (policy and regulations).

A programme can choose to focus on one key intervention area, or, more often, cover multiple intervention areas, each with a number of components. The focus of the intervention areas is determined in steps 1-3 (described in previous sections), in which the programme context, objectives and resources determine the scope and boundaries of interventions, and the value chain analysis determines the key challenges and opportunities to be addressed and the resources to be mobilized.

The next section provides examples of interventions (Tables 8-14) and more detailed case studies (Boxes 20-26). The design of intervention areas (and respective components) should consider economic, social and environmental sustainability as discussed in section 3.3.6.
Box 19 shows how vision and strategy are operationalized in an action plan.

<table>
<thead>
<tr>
<th>Box 19. More productive chickens for Africa’s smallholders: an example of vision, strategy and action planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>The African Chicken Genetic Gains (ACGG) project aims to leverage existing research while implementing innovative approaches in developing and supplying genetics in country value chains. For Nigeria, the following vision, objectives and actions have been proposed:</td>
</tr>
<tr>
<td><strong>Vision</strong></td>
</tr>
<tr>
<td>To transform smallholder chicken production into commercially viable enterprises with active private-sector engagement that empowers rural women and increases income and family nutrition through delivery of more productive, locally adaptable chicken production inputs and services to rural communities.</td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
</tr>
<tr>
<td>1) Determination of type of genetically improved chicken breed is highly productive locally adaptable chicken.</td>
</tr>
<tr>
<td>2) Supply of birds, inputs and services to rural smallholder chicken farmers (SHCs) is improved through Public Private Partnerships.</td>
</tr>
<tr>
<td>3) Production, productivity, income and household consumption of poultry products are increased;</td>
</tr>
<tr>
<td>4) Women are empowered (through control over resources) in the SHC value chain.</td>
</tr>
<tr>
<td><strong>To achieve developmental objectives</strong></td>
</tr>
<tr>
<td>1. Innovation Platforms are established to include women and representatives of all stakeholders and actors in the SHC value chain at national and subnational levels.</td>
</tr>
<tr>
<td>2. Women SHC farmers’ cooperatives/Business Hubs are supported or created.</td>
</tr>
<tr>
<td>3. Women’s business hubs of input suppliers and output buyers are supported or created.</td>
</tr>
<tr>
<td>4. Required actors of the SHC value chain and innovation platforms are trained.</td>
</tr>
<tr>
<td>5. Learning resources (manuals, videos, online, etc.) in four Nigerian languages on chicken management best practices are developed.</td>
</tr>
<tr>
<td>6. Monitoring and evaluation systems for the SHC VC and Innovative Platform are established.</td>
</tr>
<tr>
<td><strong>To achieve research objectives</strong></td>
</tr>
<tr>
<td>7. Baseline survey of the status of SHCs in the five zones are carried out.</td>
</tr>
<tr>
<td>8. On-station and on-farm evaluation of the genetic strains are conducted.</td>
</tr>
<tr>
<td>9. A sustainable data and sample collection system for long-term genetic gains evaluation is established.</td>
</tr>
</tbody>
</table>

5.1.1 Governance and business linkages

Strengthening governance and business linkages and focus on business operations and commercial transactions is central to any development strategy. This includes:

- the governance of the chain in its entirety;
- business linkages between different stages of the value chain (vertical business linkages);
- business linkages among actors (e.g. small-scale producers, or dairy processors’ associations) at the same stage of the value chain (horizontal integration).

Governance: the overall governance structure of the chain helps the project identify leverage points and where value-chain-wide impact can be made. This entails identifying and working with lead firms that have substantial influence over the chain, but can include other key actors such as major suppliers and even intermediaries such as traders. Other power dynamics include influence from the enabling environment.

1. Vertical business linkages: feature interventions to strengthen market access and market efficiencies and improve the distribution of benefits along the value chain. These include activities aimed at enhancing:

- communication and trust building between actors (e.g. joint field visits, facilitated negotiations, dialogue platforms);
- market information (e.g. through SMS, radio, village heads, traders, producer organizations);
- market facilitation (e.g. investment promotion, trade fairs, business matchmaking);
- linkages with small-scale producers and input suppliers/buyers;
- inclusive business models, e.g. contract farming arrangements, which provide a secure market through agreed prices and volumes, and can include embedded services (e.g. technical know-how to comply with regulations and requirements).

Hence business linkages are not limited to commercial transactions but include the flow of information, technical know-how and finance that facilitates relations.

2. Horizontal business linkages: as fragmentation of supply is prevalent in the livestock sector, when dealing with small-scale livestock producers and pastoralists, the promotion of horizontal integration, through the creation of farmers’ groups for instance, contributes to their empowerment. This not only involves capacity building but also ensuring that incentives exist for collective action, as small farmers need to recognise that benefits will outweigh costs (including their time).

Collective action results in increased bargaining power vis-à-vis buyers and input suppliers, and enables small-scale producers to meet the volume requirements of large buyers and to buy inputs in bulk. Other benefits include economies of scale in shared infrastructure (e.g. storage and transport), joint collateral for access to finance, entry points for capacity building, and joint advocacy with policy makers.

Collective action also includes professional and sector associations at regional and national level (e.g. dairy or exporters’ associations). These provide services such as policy advocacy, updated market trend information, training and skills upgrading, and investment promotion. They also act as an entry point for potential investors.
Dialogue platforms for the sector and/or specific value chain or industry platforms are very useful in enhancing the governance structure of the value chain and promoting its overall development. Such platforms help strengthen dialogue and communication, and build trust among stakeholders. Targeted interventions can include setting them up; providing support to increased representation and association; capacity building in negotiations; facilitating dialogue and conflict resolution; and organizing business round tables.

Box 20. Governance and self-management of cattle markets in Benin

The role of local intermediaries, known as *dilaalis*, in the management of livestock markets in Benin has been criticized on a number of grounds including lack of transparency, undermining livestock keepers’ bargaining powers and preventing the collection of market fees due to the absence of records.

An Netherlands Development Organization (SNV) project helped market stakeholders in Bassila to create a new vision for the local market. A market fund was established to collect fees for every animal sold, as well as parking fees. Rather than brokering animals *Dilaalis* were now tasked with ensuring the traceability, through transparent records, of all animals sold; they supervised market transactions in their allotted areas, receiving a fixed price per head. Some infrastructure improvements were co-financed by the donor and the organization grouping the market traders, sellers and intermediaries.

As a result, livestock keepers have been empowered to negotiate the selling price for their animals directly. Management transparency and efficiency have been improved, and government taxes are now being collected by *dilaalis*. The number of animals bought and sold has increased, and the market’s turnover has risen from under $2600 in 2008 to over €20,000 in 2011, while the number of market employees has doubled in the period.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcomes/Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assist the creation, reinforcement or expansion of the organization of small-scale producers and/or other actors in the value chain</td>
<td>Increased bargaining power of small producers, possibility of working with large buyers and of accessing services at reduced cost. Governance and business linkages are strengthened</td>
</tr>
<tr>
<td>Promote and support the establishment of contract farming, with arrangements for continuous supply and premiums for better product quality (including embedded services – e.g. technical know-how and training)</td>
<td>Quality of the product is improved, farmers’ incomes are increased, continuous supply is secured</td>
</tr>
<tr>
<td>Support the development of information systems providing value chain actors with latest market trends and other relevant news, through radio or mobile phones</td>
<td>Actors are better informed and their bargaining power is increased</td>
</tr>
<tr>
<td>Assist the stipulation of contracts between landowners and livestock producers on rules for the management and use of grassland areas</td>
<td>Land conflicts are better managed and grassland management is improved</td>
</tr>
<tr>
<td>Train facilitators on conflict mediation in specific contexts, e.g. pastoralism</td>
<td>Conflicts and governance are better managed</td>
</tr>
<tr>
<td>Raise awareness of community leaders and local authorities relative to gender issues in livestock production</td>
<td>Practices evolve towards better gender equity and empowerment</td>
</tr>
<tr>
<td>Support organization of gender-sensitive capacity building on farming practices involving both men and women</td>
<td>Dialogue is improved, awareness is raised towards gender issues and decision-making reflects better gender equity and empowerment</td>
</tr>
<tr>
<td>Develop new partnerships between actors to improve collection and aggregation of products via cold chains, thus allowing remote dairy farmers to send goods to urban supermarkets</td>
<td>Direct access to markets for small-scale producers is increased</td>
</tr>
<tr>
<td>Organize multi-stakeholders meetings and sessions, business roundtables, and networking</td>
<td>Build trust among actors</td>
</tr>
</tbody>
</table>

### 5.1.2 Practices and technologies

Improved practices and technologies increase competitiveness and productivity and can be applied at any stage of the value chain. Areas to work on include:

- Technical capacity and skills: improved farm inputs and delivery (of feed, health care and animal genetics); production (animal husbandry); handling and transport; and processing practices. The aim is to improve productivity and reduce costs and food waste.
Improved practices do not only apply to production and processing but also to distribution and outreach. For example, in a genetic improvement programme, ensuring that improved genetic material reaches remote, small-scale producers is essential to successful artificial insemination.

- Business management skills: many actors in the value chain lack the skills needed to make a business profitable, including basic accounting, production planning and marketing know-how.

- Technology: together with improved skills and capacity, improved technology is key, along with the capacity to adopt it. This is particularly relevant for value chains aiming to capture more value added in terms of improved quality, processing and treatment of livestock products. Technology upgrades vary from the use of basic tools to complex, mechanized processing systems.

Essential to these activities is knowledge management, technology roll-out, and the scaling up of good practices (see section on scaling up below). As far as possible, facilitation should be favoured over direct interventions, i.e. training should be provided by extensions services or through farmer field schools.

---

**Box 21. Adoption of new practices by small-scale, beef cattle producers in Viet Nam**

Rising demand for beef in Viet Nam provided poor cattle farmers in Ea Kar district, Daklak province, with the opportunity of increasing their livelihoods. Until recently, poor carcass quality made it difficult for them to sell their product. The IFAD-designed Fodder Adoption Project offered a solution through the adoption of improved fodder practices and better access to market.

One of the key interventions of the project concerned fattening cattle prior to sale, with supplementary feeding of cassava meal, rice bran and other farm-grown crops and crop by-products. The project worked with farmers’ and women’s unions to deliver extension services through cross visits, field days and farmers’ training programmes.

Various market studies and adoption surveys were conducted between 2004 and 2010. In 2007–2010, the number of households producing fodder increased from 2,407 to more than 3,100, representing almost one third of all households raising cattle. The number of extension workers and farmers’ clubs involved also increased significantly over the period. Interviewed farmers invariably listed labour savings (after grazing animals were moved to stall-feeding) and improved body condition as the main reasons for growing forage. While in 2004 almost all of the cattle produced were consumed locally, four years later 85 percent were sold for urban consumption outside the district.

Table 9. Examples of interventions related to practices and technologies

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcomes/Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate the adoption of improved vaccination and veterinary care practices</td>
<td>Livestock mortality is reduced, and production is increased</td>
</tr>
<tr>
<td>Promote and support the adoption of improved fodder-growing practices (e.g.</td>
<td>Improved forage seeds are made available to small-scale producers to improve</td>
</tr>
<tr>
<td>support some farmers in producing and selling improved forage seeds to</td>
<td>their feeding practices</td>
</tr>
<tr>
<td>small-scale producers)</td>
<td></td>
</tr>
<tr>
<td>Promote and support the adoption of grazing management plans at community</td>
<td>Feeding is improved, while overgrazing is reduced and carbon sequestration is</td>
</tr>
<tr>
<td>level</td>
<td>improved</td>
</tr>
<tr>
<td>Promote and support the adoption of improved housing practices and labour-</td>
<td>Mortality due to predation is reduced, production is increased and the number</td>
</tr>
<tr>
<td>saving techniques for chicken farming</td>
<td>of chicken keepers grows</td>
</tr>
<tr>
<td>Support the implementation of an animal identification system.</td>
<td>Traceability of products is improved and performance recording is facilitated</td>
</tr>
<tr>
<td>Support the implementation of performance recording (milk production, growth)</td>
<td>Producers may monitor their production and adapt their practices (selection)</td>
</tr>
<tr>
<td>by small-scale producers</td>
<td></td>
</tr>
<tr>
<td>Support the implementation of a community-managed breeding programmes</td>
<td>Performance of animals is improved</td>
</tr>
<tr>
<td>Support the acquisition of a cooling truck to transport refrigerated milk</td>
<td>Milk sanitary quality is improved and food losses are reduced</td>
</tr>
<tr>
<td>from producers to dairy plant</td>
<td></td>
</tr>
<tr>
<td>Organize training sessions, demonstrations, mentoring, exchanges and exposure</td>
<td>The performance of the value chain actors, both technically and commercially, is</td>
</tr>
<tr>
<td>visits to build capacity for improved production and processing, business</td>
<td>upgraded</td>
</tr>
<tr>
<td>management, marketing, organization and leadership</td>
<td></td>
</tr>
<tr>
<td>Train facilitators to conduct a farmer field school cycle</td>
<td>Farmers’ capacities are increased in various thematic areas through continuous</td>
</tr>
<tr>
<td></td>
<td>farmer field school cycles</td>
</tr>
</tbody>
</table>

5.1.3 Standards and certification

Amid rising concern from consumers, animal health and food safety standards have become an integral part of any livestock value chain, where they help improve both product and process quality, and access to new markets. Higher standards also help to minimize food and economic losses.

Animal health and disease risk-management interventions (see Box 13) are aimed at limiting the impact of disease on animal production and avoiding outbreaks. Project interventions include: support to public institutions in policy and legislation; improving operational management; establishing disease surveillance (in cooperation with farmers); and providing capacity development and training for qualified health workers.
Voluntary standards are also gaining importance given growing public concern for environmental, social, and animal welfare issues. Such standards increase the quality and competitiveness of livestock products and respond to the demands of new market channels. However, the fact remains that in most developing countries, standards and regulations affecting the livestock sector (except for food safety standards) cater largely to the requirements of export markets.

Interventions should address both:

- demand for standards (e.g. improved awareness of animal health food safety standards by value chain actors; capacity for compliance and management of disease outbreaks);
- supply of services (e.g. testing, accreditation, certification, and support for livestock registration and traceability systems).

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcomes/Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate the adoption of traceability systems or health standards mandatory for some countries</td>
<td>Access to export markets</td>
</tr>
<tr>
<td>Facilitate the adoption of voluntary standards (certification, accreditation, labelling, etc.) by value chain actors, with a specific focus (organic, free range, Protected Designation of Origin (PDO), ISO 14000)</td>
<td>Specific market segments with increased added value can be accessed</td>
</tr>
<tr>
<td>Support capacity building for testing compliance and certification to specific standards</td>
<td>Consumer trust is increased towards product quality, and accountability is improved</td>
</tr>
<tr>
<td>Awareness raising and capacity building regarding standard requirements and compliance</td>
<td>Value chain actors understand how and why to comply with standards</td>
</tr>
</tbody>
</table>
5.1.4 Financial services

Value chain finance can either come from:

- **Individuals:** producers’ own savings, or loans from personal networks (family and community). The livestock themselves act as a saving mechanism and collateral, with yield (through fattening and reproduction) on stock resulting in greater returns than savings at a bank.
- **Community**: e.g. savings through informal and semi-formal savings and credit groups. This is prevalent in remote rural areas.

- **Core value chain**: through embedded, and other services, core value chain actors may finance certain activities (e.g. an input supplier provides advance credit for providing inputs to small-scale producers). The governance structure largely influences internal value chain financing (FAO 2010), which includes in-kind credit from large suppliers in the form of inputs, or advances on payments from lead firms and produce buyers.

- **Support services**: external institutions, such as banks, MFIs and formal credit and savings groups, provide financial instruments (savings, credit, animal insurance, etc.).

Financing the livestock sector is often viewed as hazardous due to the risk of disease, but livestock can also act as collateral for loans.

---

**Box 23. Addressing financial constraints in a dairy value chain in Uganda**

In order to address problems stemming from the remoteness of dairy farmers in Kisoro district of Uganda and facilitate business linkages between actors in the value chain, a Memorandum of Understanding was signed between four parties: the Rubuguri dairy farmers’ cooperative society (RUDAFCOS), the Saving and Credit Cooperative (SACCO), Birunga Dairy Industries (BDI), a milk processing plant and National Agricultural Advisory Services (NAADS), an extension agency.

Through the MoU:

- A loan was provided by SACCO corresponding to 50 percent of the cost of a cooling truck (to be paid back in instalments) to transport conditions milk to the processing plant. The tanker was supplied by BDI, while the other 50 percent of its cost was financed by the project.
- Individual accounts were opened for cooperative members, with milk payments paid in every 15 days, thus allowing members access to microcredit.
- The farmers’ cooperative acted as an intermediary between the dairy plant, the credit institution and producers for milk payments, credit reimbursements, and guarantees.

*Source: FAO 2013. The food security through commercialization of agriculture programme in the Great Lakes region. Rome, FAO*

---

Project interventions should address

- **Demand for financial services**: increasing the demand for financial products and services by enhancing the financial literacy and business management capacities of small-scale producers and processors (e.g. bookkeeping, accounting etc.).

- **Supply of financial services**: ensuring an increase in the quality and availability of both semi-formal and formal financial services and products. This includes helping institutions improve administration, reduce transaction costs and set up delivery mechanisms for remote clients with low savings volumes. It also covers the development of suitable financial instruments, including:
o Guarantee facilities to commercial banks or MFIs; leasing services; short- and long-term credit and loans; insurance, including weather-based index insurance, etc.

o Capacity building of commercial banks, MFIs and savings and credit associations, and outreach to small-scale producers, e.g. through mobile banking, agent banking, etc. thereby reducing transaction costs.

o Promotion of impact investment from either private or public sources, ensuring that investments generate a measurable, beneficial social or environmental impact alongside a financial return.

Capacity building should incorporate specific aspects of the livestock sector such as household decisions to make non-productive investment in additional cattle, which is seen as adding to greater social status than savings held in banks.

For instance, in a cattle project in Zambia, an expansion of herd size did not result in increased sales because farmers preferred to keep animals as insurance and as an indication of social prestige. Project managers then suggested that the current social system should not be altered, but that the project should produce enough herd growth for farmers to manage separate commercial herds. The idea was that “developing a two-herd system could eventually lead to commercial management and increased incomes without damaging an important coping mechanism”. (Microlinks, 2010).

<table>
<thead>
<tr>
<th>Table 11. Examples of interventions related to financial services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
</tr>
<tr>
<td>Support credit institutions in providing loans targeting small-scale livestock producers and related value chains</td>
</tr>
<tr>
<td>Support loan system offered by abattoirs to small-scale producers to purchase feed or young animals</td>
</tr>
<tr>
<td>Facilitate the establishment of system of guarantees for credit institution, for instance guarantees backed by producer cooperatives</td>
</tr>
<tr>
<td>Promote the adoption of money transfer systems by livestock keepers</td>
</tr>
<tr>
<td>Facilitate the adoption of insurance systems (e.g. weather-based insurance schemes)</td>
</tr>
<tr>
<td>Facilitate the financing of specific infrastructure through instruments such as finance leasing and co-financing, producer group financing, etc.</td>
</tr>
<tr>
<td>Capacity building and financial literacy training is provided to small-scale producers</td>
</tr>
</tbody>
</table>
5.1.5 Other support services

A vibrant, functioning, demand-driven support market is necessary for any value chain to reach its true market potential. Such markets can be treated as individual market systems, as highlighted in the Market System analysis. Other relevant services, in addition to Standards (Intervention Area 3) and Finance (Intervention Area 4) include:

- Operational functions that directly add value to the livestock product, e.g. provision of inputs such as packaging, equipment and technology, but also other services relevant to production and processing, such as marketing, logistics and transport. Some support actors also provide embedded services, such as a machinery manufacturer installing machines and providing training for their use together with after-sales maintenance and embedded credit and loans.

- Innovation and training services, e.g. strengthening the quality of training, the delivery and outreach of extensions services (public, private and community); improving training and skills through technical and vocational education and training, as well as research and development (public, private and international research institutions).

As with any market system, interventions can address both the demand and supply sides of the services, as well as the support functions and rules and regulations governing these markets. Improving delivery and access to these services, and addressing cost structure and quality of the services, is at the core of any intervention.

Support functions, are provided by both public and private actors, and one should make sure that strengthening the role of public services does not crowd out the private sector. Services, which remain largely in the public domain, include research into veterinary drugs, vaccine development and testing, related technologies, and improved animal feed resources.

---

**Box 24. Sidai – an example of a private services for livestock producers**

Sidai Africa, a private company started in 2011 with support from Farm Africa, aims to deliver veterinary and livestock services (drugs, seeds, fertilizers, AI, training, marketing, etc.) through a network of franchises in Kenya.

The Sidai network has expanded rapidly and now groups 130 company-run stores and 350 stockists. The company is able to reach remote areas that are not covered by public extension services, and offers negotiated prices for veterinary products and inputs. It ensures quality through franchise control checks and quality agreements with suppliers.

Source: [www.sidai.com](http://www.sidai.com)
Table 12. Examples of interventions related to other support services

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcomes/Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attract artificial insemination companies to provide AI services through attractive business models</td>
<td>Small-scale producers have access to improved animals</td>
</tr>
<tr>
<td>Train public extension services agents in new practices, species and breeds, and improve outreach of extension services</td>
<td>New practices are introduced to small-scale producers and reach a greater number of them</td>
</tr>
<tr>
<td>Assist the establishment of remote technical resource centres run by extension services to provide not only veterinary and insemination services, but also training and information on livestock markets</td>
<td>Services in remote areas are provided and capacities are improved</td>
</tr>
<tr>
<td>Assist the establishment of extension service by private actors in the value chain (abattoirs, dairy industry)</td>
<td>Services and outreach in remote areas are improved</td>
</tr>
</tbody>
</table>

5.1.6 Infrastructure

The performance of value chains and markets is constrained by the availability, quality and suitability of infrastructure. This can both be general or specific to the livestock sector and value chain, and includes:

- national infrastructure, e.g. rural access roads, cold storage facilities at ports;
- livestock input and production infrastructure, e.g. sheds, fencing, livestock routes, boreholes, dipping facilities, stable, wells;
- collection and marketing infrastructure, e.g. weighbridges, milk collection centres, wholesale marketing structures;
- livestock processing infrastructure, e.g. local slaughter facilities (also catering to small ruminants), dairy plants;
- transport infrastructure, e.g. cold chains, trucks, trains;
- support service infrastructure, e.g. livestock service centres, veterinary laboratories, quarantine stations, veterinary checkpoints.
Development partners’ programmes may not have sufficient funds (and/or mandate) to address large infrastructural works such as feeder roads or dairy plants, but they can deal with smaller infrastructure needed for successful value chain development in specific areas (such as dipping facilities, fencing, boreholes etc.). Indeed, while some projects such as access roads and cold chain facilities can run into millions of dollars, smaller projects such as dipping facilities, fencing and bore holes, may only cost a few thousand.

Furthermore, co-funding and other funding streams and partnerships can be mobilized in order to address infrastructure requirements beyond the capacity, mandate and resources of facilitators and implementers.

Public-private partnerships (PPPs) are an important tool in securing the necessary infrastructure investments, and in sharing costs and risks. PPPs can overcome the limited funding often available to the public sector for the infrastructural upgrading that is essential to economic growth.

---

**Box 25. Establishing a network of milk collection points in Nangarhar province (Afghanistan)**

Implemented through collaboration between FAO and the Afghan Ministry of Agriculture, with finance from IFAD, the project, “Development of integrated dairy schemes in Nangarhar province”, aimed to strengthen livestock production systems among poor rural households. Following the Integrated Dairy Scheme (IDS) model already successfully applied in the country, the project focused on four components: (i) feed resources, (ii) animal health and AI services, (iii) integrated dairy development and (iv) institutional support to milk cooperatives.

One specific outcome concerned the establishment of a network of milk collection points and milk producers’ cooperatives targeting urban consumption in the province. It required the development of adequate infrastructure, which absorbed much of the programme’s budget. Of a total of US$ 2,176,674 spent in infrastructure and equipment, the greater part was used to build milk chilling centres (22%) and dairy plants (10%), to purchase a milk pasteurizer (12%) and milk storage tanks (7%).

One apex enterprise, Khatiz Dairy Union (KhDU) was established with 1,510 participating farmers. During the six years of the project, 18 milk collection points, a network of retail outlets, a milk collection business, and a multi-product dairy processing plant were created.

Main challenges during the project were related to administrative hurdles in land allocation, growing insecurity, and delays in connecting to the electricity grid.

One year after its launch, the plant was producing about 3,000 litres of milk a day. Smallholder farmers’ revenues from milk sales were reported to have triples from US$ 100 to US$ 338 per annum. The project also led to the creation of 17 new jobs. At the end of the project, the whole system was designed to be fully sustainable.

Table 13. Examples of interventions related to infrastructure

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcomes/Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract local communities to improve a local road</td>
<td>Access to markets is improved</td>
</tr>
<tr>
<td>Support the establishment of feeding and watering infrastructure, including water pans, feed stores, pastures, fens, veterinary drugstores and markets along stock routes, with a focus on women’s limited mobility and physical skills.</td>
<td>Services are provided along migration routes or within women’s reach</td>
</tr>
<tr>
<td>Support the establishment of remote formal market buildings and structures (pens, stables, etc.)</td>
<td>Small-scale producers are able to sell their animals at a better price</td>
</tr>
<tr>
<td>Support the establishment of cooling and collection centres allowing milk to reach urban markets</td>
<td>Milk from remote, small-scale producers is sold directly to urban supermarkets, providing them with a continuous supply</td>
</tr>
<tr>
<td>Support the establishment of strategically located processing units (abattoirs, tanneries, dairy plants, etc.) through private investment or PPPs</td>
<td>New meat, leather, and meat products are produced using improved techniques and technologies</td>
</tr>
<tr>
<td>Evaluate infrastructure needs for sector development and assess public and private investment needs</td>
<td>Future infrastructure investments are planned for</td>
</tr>
<tr>
<td>Attract private investment for livestock-related infrastructure development</td>
<td>Finance of future infrastructure can be negotiated</td>
</tr>
</tbody>
</table>

5.1.7 Policies and regulations

Without an improvement in the business and investment environment at policy level, any improvement to a chain’s competitiveness may be limited. For each of the interventions addressed above (Intervention Areas 1-6), corresponding policies and regulations need to be in place. In support of policies that are weak or missing altogether, the project can provide evidence-based policy advocacy and assistance through multi-stakeholder platforms, thus helping bring about the policy reforms and institutional development required.

For example, in the pig sector in Uganda (CGIAR 2010), the policy framework did not distinctly address pig farming and its development, even though the sector had grown on its own account and national policy makers recognised its high potential for food security and rural income diversification. The need was identified for a subsector policy framework to stimulate the growth of pig farming and for Uganda to achieve its output targets for meat production (which currently focuses on other livestock sectors, which have higher production costs). A comprehensive subsector policy is to be developed to address the specificities of pig production, including breeding, farm management, access to animal health services, drugs and feeding, productivity, and, in particular, marketing of livestock and livestock products for export markets (which is currently missing altogether).
Public-Private Dialogue (PPD) can cover specific value chains, or industries and sectors. As mentioned, in the governance component (Section 3.3), PPD can strengthen the role of small-scale farmers’ organizations through capacity building (especially in negotiation, lobbying and advocacy).

Institutional development also entails strengthening the implementation of policies and regulations at national level, and, through decentralization, giving regional and local governments greater powers over issues such as animal health, food and food safety. Furthermore, a legal framework needs to be there to ensure policies are implemented correctly.

Policy interventions may not always be sector-specific. They can address broader economic policy options (e.g. trade policies, improved public financial management, industrialization programmes, export promotion policies), or support sector regulations, e.g. food and safety norms and MFI regulations. Policies, regulations and legislation on environmental impacts should be in place, covering issues such as land use planning and management, and coordination with other land-uses. Other relevant areas include regulations on land tenure and leases, title deed provision and management of common grazing land, especially on transboundary stock routes.

A review of the pig industry in Zimbabwe (Mutambara 2013), for instance, identified a set of key regulatory constraints, including import duty policies, GMO policy, border protocols and costly labour laws. It was concluded that in order to equip stakeholders with strong, evidence-based instruments to advocate for a favourable policy environment, a regulatory review was needed to provide hard evidence that existing regulations hampered the industry.
Box 26. Ethiopian policy toward the leather value chain

With an eye on export markets, the leather and leather products industry (LLPI) was prioritized by Ethiopia to capitalize on the country’s comparative advantage in livestock resources. It soon became clear that the issue of quality must be tackled at different stages in the leather value chain. With the support of various international agencies (including UNIDO and GTZ) the government launched an ambitious and comprehensive upgrading programme.

The LLPI national strategy framework is set out in different policy documents, including the Industrial Development Strategy (IDS) and the Plan for Accelerated and Sustained Development to end Poverty (PASDEP). The IDS framework is based on several principles, including: prioritizing linkages between industry and agriculture; promoting export-oriented and labour-intensive sectors; and public-private partnerships. The PASDEP outlines policy interventions in three key areas: (i) support to the private sector, (ii) coordination and guidance on investment decisions between different stakeholders and (iii) addressing market failures.

In order to foster the development of LLPI, an independent federal government institution, the Leather Industry Development Institute (LIDI), was established in 2004 to formulate policies, enhance technological development and attract potential investors. It also formed partnerships with foreign associates such as the Central Leather Research Institute in India, focusing on small and medium enterprises and stakeholders located in rural areas.

Specifically, the policies implemented by LIDI involved:

- provision of information and support to investors through market studies and research;
- enhancing human capital and technology acquisition through research and training;
- promoting public–private sector coordination, e.g. by facilitating bureaucratic procedures for entrepreneurs;
- promoting green industrial production processes and offering training and R&D on green technologies;
- providing government fiscal incentives, e.g. tax exemptions, bilateral investment treaties, etc.

In terms of performance LLPI grew from US$ 44 million to US$ 110 million between 2004 and 2012. Industrial policy institutions may constitute an important element in establishing effective industrial policies addressing challenges to industrial development and structural change, and promoting the partnerships required to develop the sector.

Sources: Altenburg, T. 2010. Industrial policy in Ethiopia. DIE, Bonn, Germany.

Table 14. Examples of intervention related to policies and regulations

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcomes/Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assist and promote the development of policies that support livestock production, processing, trading (nationally and internationally) and private investments, through specific tariffs, subsidies, guaranteed prices and tax exemptions</td>
<td>Livestock production and products are supported</td>
</tr>
<tr>
<td>Assist the development of a legal framework allowing the private sector to organize itself</td>
<td>Legislation enforcement is supported</td>
</tr>
<tr>
<td>Assist the development of policies that promote the organization and coordination of value chain actors in an inclusive manner, allowing them to make their voices heard at a regional and national level</td>
<td>Small-scale producers and actors can band together to address their concerns and participate in the development of policies</td>
</tr>
<tr>
<td>Assist the development of a legal framework encouraging value added processes through official recognition and promotion of specific voluntary standards</td>
<td>Value added in value chains under targeted voluntary standards is increased</td>
</tr>
<tr>
<td>Assist the development of natural resource that promote and support ecosystem services and good practices relative to environmental management, and address the trade-offs between agriculture and the environment</td>
<td>Environmental sustainability of livestock production is increased</td>
</tr>
<tr>
<td>Assist the development of a legal framework (law, decrees, ordinances) on pastoral land rights, land tenure and rangeland management</td>
<td>Rights of pastoralist are established, conflicts are settled, and rangeland management is improved</td>
</tr>
<tr>
<td>Assist the development of a standard code of hygiene for production, processing and distribution that does not set conditions that small-scale producers cannot meet</td>
<td>Sanitary quality of products is improved and standardized.</td>
</tr>
<tr>
<td>Assist the development of transboundary agreements relative to the movement of animals and animal products</td>
<td>Livestock migration is facilitated and international trade is improved</td>
</tr>
</tbody>
</table>

Cross-cutting issues

As previously stated, VC projects may bring up cross-cutting issues which require interventions in the different components listed above, or, in some cases, interventions on specific problems.

For instance, the sustainable use of land, water and the environment, as well as enhanced climate resilience, are essential to ensure that productivity and expanded production systems make minimal or negligible impacts on the environment (see also Box 15).

In the Tanzanian Livestock Development Strategy (United Republic of Tanzania, 2010), for example, supporting the sustainable use of grazing land involves: carrying out an inventory of available pastures and agreeing on guidelines for their use; organizing pastoralists into producer organizations; promoting the establishment of irrigated pasture seed farms; and promoting forage conservation in the form of hay and silage.
In some cases, specific tools have been developed for some issues, e.g. conflict situations (Günduz and Klein, 2008) or employment matters (Herr and Muzira, 2009), and they should be used together with the guidelines.

5.2 Partnerships in implementation

In order to design and implement the vision, strategy and action plan, projects will need to enter into partnership(s) with strategic (or political) implementing partners (Table 15). Participatory approaches should go beyond extractive or consultative interactions with stakeholders and engage them in developing collaborative solutions to value chain constraints. A strategy and development plan will only remain a document unless partners can be found to take ownership of the vision and of its design and operationalization, including financing the development plan. These partnerships will need to be defined from the onset of the programme, and are closely linked to project interventions as well as to the scaling up and exit strategies.

Table 15. Partner types

<table>
<thead>
<tr>
<th>Partner Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic or political partner</td>
<td>Public sector Key political partners (e.g. Ministry of Agriculture, Department of Livestock, other relevant Ministries) for political support in promoting an enabling environment for value chain development</td>
</tr>
<tr>
<td>Core value chain partners</td>
<td>Private sector (mainly) Partnerships with actors directly involved in the production of livestock products (e.g. producer organizations, lead firms, traders, etc.)</td>
</tr>
<tr>
<td>Support function partners</td>
<td>Private and public sector Supporting actors who are not directly involved in production but provide performance-enhancing services and expertise (e.g. research and development, financial services, packaging companies)</td>
</tr>
</tbody>
</table>

Projects act as facilitators for development strategies (they build incentives, connect and build trust among stakeholders, ensure stakeholder commitment and buy-in, etc.) in partnership with relevant actors, adopting a market-oriented approach in all interventions. They must find answers to questions like: What is the demand for the intervention? What price are the value chain actors willing to pay for this service? If they cannot afford this service, what mechanism can be introduced (i.e. credit, embedded services, etc.) to help them? Does the intervention lead to intended behavioural changes and impacts? Projects should recruit partners who have the capacity to perform facilitation functions themselves.

It is important that the role of each actor is clearly defined in implementing interventions, and that actors assume responsibility and ownership from the start. For each intervention (or intervention groups) a leader should be identified who is responsible for the delivery of the activity.

The value chain mapping, governance, and capacities analysis provide input for identifying critical
partners for project implementation. Projects need to identify value chain actors who act as change agents (producer organizations, sectoral associations, lead firms etc.) and:

- have influence within the value chain and its dynamics;
- have a value-chain-wide overview;
- have a genuine interest in the project and are committed to change;
- have the willingness and capacity to promote change;
- have the willingness and capacity to invest resources;
- have a leverage position in the value chain.

Partnering with the private sector and mobilizing private capital is important in order to ensure the effectiveness and sustainability of project interventions. The decisions and investments of the core value chain actors are what drive any development strategy. The private sector is much more suited to cater and adapt to the changing context and dynamics of a value chain, as it is closer to the market, driven by profits and market opportunities, and hence more efficient.

It is the role of the strategic partners to address any market inefficiencies that constrain project interventions, either directly or indirectly. The role and balance of private and public operations within livestock services and support functions is becoming a critical issue, particularly as public services (e.g. extension services, breeding programmes, etc.) are often inefficient, costly to run and do not provide the coverage needed.

Public-private partnerships (PPPs) are the core of any value chain development strategy. These can come in the form of public-private collaboration and public-private dialogue, or be based on more formal contractual arrangements. Areas covered may include livestock infrastructure development, research, technology development and innovation, and the delivery of services and support to small-scale producers and processors in the value chain. PPPs can be used to overcome funding limitations, improve efficiency, productivity and outreach (through markets and sales networks), help share risks, and reduce transactions costs (e.g. by organizing farmers into producer organizations). However, in order for contractual PPPs to be effective, a sound enabling environment (i.e. an appropriate PPP institutional, legal and regulatory framework) needs to be in place.

Public-Private-Producer Partnerships (PPPP) include bringing producers into the process and can help to leverage private investment, strengthen policy dialogue, secure technology and know-how, and utilize other actors’ social and political capital to scale up positive results sustainably. Combining public goods, financial instruments and contractual arrangements with small-scale farmers and agribusinesses through 4Ps can attract additional resources and support from banks, equity investors, input suppliers, equipment-leasing firms and other value chain suppliers (IFAD, 2016b).
G. Step 6: Monitoring, Evaluation and Scaling-up

6.1 Monitoring and Evaluation (M&E) systems

In order to enable a project to achieve its vision and to measure its effectiveness, a result-based monitoring and evaluation (M&E) system is needed. M&E systems serve different purposes at various times during a project, but should be designed from the onset to include clear, logical, causal impact indicators (and milestones), together with baseline data and targets.

An M&E system serves the following purposes:

- **Project steering** – The system provides information assessing the effectiveness of project interventions (operational monitoring) and of overall strategy (strategic monitoring). It allows the project to adapt in order to optimize project impact and ensure that value chain development is on track to achieve the strategic vision. This information is relevant at all levels, from field staff (operational) up to project management (strategic). Monitoring provides feedback for implementation and project management on a continuous basis, and is particular relevant due to the dynamic nature of markets and the enabling environment.

- **Measurement of project effectiveness and impact** – The system provides quantitative and qualitative monitoring and evaluation of the effectiveness of project implementation, and of its achievement of indicators, objectives and development vision. Monitoring is carried out at intervals, mid-term and at the end of the project, depending on donor requirements. It provides valuable information for accountability and learning, and for future project design.

- **Communication, learning, accountability** – Most value chain development projects are funded with taxpayers’ money, hence spending needs to be transparent and accountable. The M&E results communicate the progress and overall effectiveness of the project to the general public, strategic partners and donor(s). Project progress is also used in external communication to attract new partners, bring buyers and lead firms on board, and mobilize resources.

A project M&E system is part of a larger, programme M&E system. These guidelines differentiate between monitoring as an ongoing analysis of project performance, and evaluation at mid-term, or at regular intervals, and/or at the end of a project to measure overall performance.

**Who should get involved?**

A steering committee should be established to implement the M&E process, collecting the required data in collaboration with relevant actors, and reporting to the donors and strategic partners, as well as to the value chain partners.

Depending on the fact the scaling up strategy imply an institutionalization of the process or an increase of the scale, institutional and political partners, as well as new market players (involving different actors across the extended value chain) should be involved.


6.1.1 Defining the overall M&E framework

The first step is to define the purpose of the M&E and the target audience (internal management, donors, strategic partners, etc.).

The following questions will need to be answered to define the M&E milestones:

- How often are M&E reports required by the funding agency and/or political partners (monthly, quarterly, annual), and in what format?
- How will monitoring results feedback to project management, including at field level?
- Based on funding requirements and resources, is an end-of-project evaluation foreseen, and are mid-term or regular evaluations planned? How will the evaluation be conducted (internal or external consultants)?

Further questions to be resolved include:

- What M&E resources are available? This will define how detailed the M&E framework will be and how elaborate and frequent data collection will be.
- Who is responsible for M&E for the project and for individual components? How often will assessments be conducted?

6.1.2 Causal impact framework

When developing the action plan, the interventions’ causal impact framework is defined, from inputs to activities to outputs and intermediate and final outcome/s, including behavioural changes and systems-level changes needed to trigger impact in support of the project vision. It is also necessary to:

- define project objectives, components and subcomponent, together with respective indicators. The indicators should be as measurable as possible;³
- operationalize the indicators though sequenced interventions, activities and inputs (e.g. experts, workshops, travel, construction materials, etc.);
- define the baseline: the data and information collected during the value chain diagnosis can also be used as baseline data;
- define targets for the indicators;
- define data sources (see Section 3 on Data sourcing);
- define means of verification, e.g. project outputs, minutes of meeting, surveys, documents.

The causal pathway for achieving an intended impact largely depends on the focus of the project and the strategy. Table 16 shows the various levels of a results-based framework in value chain development. Each of the levels can be broken down into intermediate steps.

---

³ Indicators should be SMART, i.e.: Specific (target a specific area or business function); Measurable (quantify as much as possible); Agreed upon (specify who will do what); Realistic (truly achievable given the time and resources available); Time-related (specify when the result(s) are to be achieved) (Broughton and Hampshire 1997).
<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultimate impact</td>
<td>Poverty alleviation (economic, social and political aspects)</td>
</tr>
<tr>
<td>Impact</td>
<td>Increased income opportunities</td>
</tr>
<tr>
<td></td>
<td>Increased decent employment opportunities</td>
</tr>
<tr>
<td></td>
<td>Increased value added and growth</td>
</tr>
<tr>
<td>Outcome</td>
<td>Increased competitiveness</td>
</tr>
<tr>
<td></td>
<td>Increased profits, sales, turnover</td>
</tr>
<tr>
<td></td>
<td>Increased access of the poor to markets (e.g. end-markets, input markets)</td>
</tr>
<tr>
<td></td>
<td>and services (e.g. financial services)</td>
</tr>
<tr>
<td></td>
<td>Increased sustainability</td>
</tr>
<tr>
<td>Intermediate outcomes</td>
<td>Improvements in chain performance and productivity due to thematic focus of</td>
</tr>
<tr>
<td></td>
<td>project interventions, e.g. climate mitigation, improved productivity of</td>
</tr>
<tr>
<td></td>
<td>animals, increased climate resilience, improved technology, improved</td>
</tr>
<tr>
<td></td>
<td>services, strengthened enabling environment, etc.</td>
</tr>
<tr>
<td>Use of Output</td>
<td>Behavioural change of the value chain actors</td>
</tr>
<tr>
<td></td>
<td>Actions that are taken and services provided</td>
</tr>
<tr>
<td></td>
<td>Linkages and virtuous self-sustained circles established</td>
</tr>
<tr>
<td></td>
<td>Policies and other enabling environment conditions</td>
</tr>
<tr>
<td>Output</td>
<td>Outputs from value chain project facilitation and support that address the</td>
</tr>
<tr>
<td></td>
<td>capacity and incentives of value chain actors and conditions in the enabling</td>
</tr>
<tr>
<td></td>
<td>environment. E.g. active producer association, guidelines on food safety,</td>
</tr>
<tr>
<td></td>
<td>market information provided</td>
</tr>
</tbody>
</table>

Indicators specific to small-scale livestock producers may eventually relate to the animals themselves (productivity in term of milk production or growth, reproduction, mortality, etc.), but also to the status of livestock production on the farm (share of income from livestock) or the different issues raised in Part I Figure 2 (e.g. milk losses throughout the chain, changes to carrying capacity of pasture areas and rangelands, etc.). Annex 4 provides a non-exhaustive list of examples of outcome and impact indicators related to livestock value chains.

### 6.1.3 Data collection

Defining the M&E questions (the [sub]indicators and milestones) defines what you are monitoring and evaluating, and hence what data are needed.

- Defining M&E questions, based on causal impact logic:
  - Evaluation questions are broader, e.g. in a project on climate resilience, did the interventions succeed in addressing the needs of the community (relevance) and in increasing climate resilience (outcome)?

  Based on OECD criteria, projects are evaluated based on their relevance, efficiency, effectiveness, outcome and sustainability.
o Monitoring questions are more specific, e.g. did training in financial bookkeeping result in increased management of finances by processors, leading to greater access to loans (as the processors maintained financial records), and increased efficiency (due to cost management)?

- Data sourcing:
  o This includes both quantitative and qualitative data, depending on the indicators.
  o Secondary and primary data collection methods (see Box 6, “Diagnosis”) should be used.
  o Data collection methods should be consistent throughout the project (from diagnosis to data collection), in order to make data comparable when monitoring progress.
  o Who is responsible for data collection e.g. project staff, enumerators, external consultants?
  o How often should data be collected and at what level?

6.1.4 Reporting

In what form the data and analysis is synthesized depends on the purpose:

- monitoring – reporting to weekly component meetings (short-term and strategic); monthly and quarterly management meetings (strategic); quarterly, bi-annual or annual donor and strategic partner reporting (accountability);
- evaluation – mid-term, interval (strategic and accountability) and/or final project evaluation (accountability);
- communication – articles, project brochures, fact sheets and presentations, social media, publications.

Lessons from the field:

- However effective a value chain development programme may be, VC performance is always dependent on the context – not only the general business environment and the economy, but also other factors such as climate change and the political situation. Hence M&E systems should also factor in the enabling environment in monitoring changes and possible impacts on project progress.

- Given that the value chain approach facilitates change and this facilitation may take place in submarket systems (e.g. input or service markets), the causal impact chain to improved performance of the core value chain is longer and hence more difficult to measure.

- Value chain development is a dynamic process, taking place in constantly changing markets and contexts. Hence M&E should be an ongoing process too.

6.2 Scaling up

Scaling-up strategy is designed from project onset and is integrated into the overall project development strategy. Scaling up can include either of the following, and is usually a combination of both:

- scaling out – increasing the geographical scale;
- scaling up – the institutionalization and strengthening of the process.
Not all value chain development programmes necessarily have an explicit scaling-up focus; however, all programmes, in their selection of partners and strategy, can incorporate scaling-up strategy elements.

The scaling-up process, like any development strategy, is private-sector-led, even though the public sector plays an important role in the enabling environment and some support functions. Figure 20 shows the *Making Markets work for the Poor* model with the crowding in of interventions and innovation (technical, commercial etc.) resulting in greater depth and breadth of market system changes.

Projects intervene to ensure sustainable changes in behaviour and practices (i.e. adopt and adapt). In order to deepen and broaden these market systems changes, the project widens partnerships and strategy to address support functions and the enabling environment, thus enhancing responsiveness and sustainability (i.e. expand and respond).

**Figure 20. Systemic change from adopt to adapt, and respond to expand**

![Systemic change from adopt to adapt, and respond to expand](source)

A scaling up strategy does not stand alone but is embedded in overall project design and various interventions. Just like any other strategy, a scaling-up strategy needs a vision (usually integrated into the overall project vision), and entails answering the following questions:

**Is the intervention scalable?** This must be established from the start. Though the scaling-up strategy is incorporated from the onset, scaling-up activities should only begin once the project is certain that the value chain actors have adopted and integrated behaviour and practice changes into their core operations and that this results in improved performance and intended outcomes. Without impact, there is no need to scale up. Hence, project monitoring should capture the drivers and enabling factors that facilitate the scaling-up process. And it should be borne in mind that very complex, context-specific interventions are more difficult to scale up:

- Is the intervention flexible enough to be applied in different contexts (i.e. different markets systems, actors, agro-climatic conditions, etc.)?
- Is there a demand elsewhere for this kind of intervention?
- Has this intervention, its process and impact, been documented and packaged in such a way that it can be replicated elsewhere?

The scaling up pathway needs to be determined and to contain these elements:

- **Selection of partners.** In the selection of partners, consideration of outreach and leverage is one of the critical factors. Which partners have influence over the value chain or sections of the value chain, and have the potential to reach out to others? These may include actors in the core value chain (scaling out), though the actors usually addressed are more often found in support
functions or the enabling environment (scaling up and out) to ensure the crowding-in phase. They include industry associations, larger investors, private business providers, training institutions, and political partners.

- **Capacity building and research and development.** The objective is to incorporate capacity building into training, and research and development, in order for the value chain actors to understand the underlying principles so that they can adapt to a changing context. It is especially important to establish clear linkages and effective relationships between beneficiaries and reliable sources of knowledge to make sure that knowledge and capacity building continue for the entire duration of the project.

- **Drivers and incentives.** Drivers, including leadership, are needed to push the scaling-up process forward. This is linked to selection of partners, where champions (such as lead firms, early adopters, political partners) are selected, and incentives are put in place so that key value chain actors commit themselves to a scaling-up agenda (e.g. developing commercially viable business models for input providers to supply inputs to small-scale farmers).

- **Financing.** Critical to any scaling-up strategy is the financing of activities, either through private investment, or by public funding or PPPs. This is linked to the overall funding of the value chain and the upgrading of financial services.

- **Institution building at mid- and macro level.** Partnering and institution building of mid- and macro-level actors such as business associations, research institutions, ministries and specialized departments. Linked to the enabling environment, certain support functions need to be in place to facilitate the scaling up, such as suitable credit facilities, public and private extension services, etc.

- **Enabling environment.** A conducive enabling environment must be in place for interventions to be scaled up or replicated in other sectors. This involves the policy framework and facilitating public funding and private investment.

Box 27 provides a concrete example of scaling up agricultural practices in Burkina Faso.
Box 27. Scaling up conservation agriculture for mixed farmers in Burkina Faso

Conservation agriculture (CA) is an approach to managing agro-ecosystems for improved and sustainable farm production while preserving the environment and local resources. It relies on three principles – minimal soil disturbance, permanent soil cover and diversification of crop species used in sequence.

The FAO project aimed to introduce conservation agriculture to mixed farmers in Burkina Faso. The practices relevant to livestock production included silage and salt-lick production, and the processing of *Mucuna* seed as value-added livestock feed.

The scaling strategy was embedded in the project from the beginning, and used farmer-discovery benchmark sites linked with Farmer Field Schools to experiment, raise awareness and build capacity around AC practices.

For instance, with a cost-benefit ratio of 527 percent, the silage and salt-lick practices were quickly adopted by farmers, who found they could also make extra income by selling surplus feed. Group training was conducted in several village to support the promotion of farmer-to-farmer dissemination of the practices. The number of beneficiary farmers increased from an initial 120 to around 1000 after the project.

H. Phasing out

From the onset of value chain implementation, a project should have a clear phasing-out strategy both for the intervention as a whole and for individual components. This is critical for interventions to be sustainable and for the system to continue responding and adapting to changing market, social and environmental conditions. Phasing-out strategy, is closely linked to a project’s sustainability as well as to its scaling-up strategy. Box 28 gives a concrete example of an exit strategy.

It must be noted that some interventions benefit from long-term support, in particular those value chain interventions that are part of a government agricultural investment plan or development programme. However, it is essential to phase out interventions to avoid dependence on external resources and actors.

The two main questions to be resolved concern partnerships:

- Who will facilitate, lead and/or implement the specific roles or functions required in action plan during the intervention and after it ends? Both the capacity and the incentives of partners need to be considered in order to ensure the continuation of interventions. The selection of partners is discussed in the “Partnerships” and “Scaling up” sections.
- Who will pay for the activities during the intervention and after the it ends? This entails the development of innovative, market-oriented business models and is linked to the financial services development of the value chain.

In practice, the success of an exit strategy can only really be gauged a few years after the end of a project. Ideally the M&E system should therefore find a way of documenting phasing-out results to feed into the learning process on value chain interventions.
Box 28. The Zimbabwe RARP programme: an exit strategy anchored in diverse partners and processes

The Rural Agriculture Revitalization Programme (RARP) was a Netherlands Development Organization (SNV) programme implemented in 2009 to improve smallholder families’ food security and incomes through increased capacity and investments by small and medium agro-businesses. Among other actions, it supported the development of value chains in the dairy, oilseeds and horticulture subsectors.

RARP based its exit strategy on five pillars:

- Mature and stable private company (contracting firms) relations with farmer groups. After several years of building relationships and trust between companies and small-scale producers, those companies could permanently embed small-scale producers into their supply chains.
- Public institutions and agencies fully able to replicate or integrate RARP approaches and models as part of their regular support to small-scale farmers. The training of extension services and farmers’ associations enabled those institutions to support the commercially oriented value chains in terms of information supply, training and the provision of services such as artificial insemination.
- Development agencies with similar interventions. Development partners were able to continue to support contract farming and scaling up interventions.
- Further SNV programmes. Synergies were sought with ongoing SNV programmes where relevant.
- Institutions, or platforms that were innovated or strengthened through the programme. Associations strengthened through RARP had improved sustainability due to the services provided to their own members.

III. Bibliography


Available at [www.fao.org/docrep/014/i2198e/i2198e00.htm](http://www.fao.org/docrep/014/i2198e/i2198e00.htm)


**FAO.** 2013 *Understanding and integrating gender issues into livestock projects and programmes.* Rome.


USAID. 2016. Value chain selection in the context of inclusive market systems. LEO Brief

USAID MicroLinks Platform. Available at https://www.microlinks.org/

Vermeulen, S. J., Grainger-Jones, E., & Yao, X. 2014. Climate change, food security and small-scale producers. CCAFS Info Brief. CGAIR Research Programme on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen.


Annex 1. Non exhaustive list of actors to be considered within a Livestock Value Chain

<table>
<thead>
<tr>
<th>Stage</th>
<th>Actor</th>
<th>Potential distinguishing factors</th>
</tr>
</thead>
</table>
| Input supply        | • Veterinary drug providers  
                    • Breeding companies  
                    • Feed suppliers       |                                                        |
| Production          | • Producers  
                    • Breeding stock suppliers  
                    • Young animal producers  
                    • Fatteners/finishers  
                    • Mixed/Pastoralists…  
                    • Owner/Non-owner  
                    • Gender and age  
                    • Peri-urban/rural  
                    • …             |
| Trading             | • Small traders  
                    • Wholesalers  
                    • Live animal transporters/traders  
                    • Collectors |
| Processing          | • Milk cooling centres  
                    • Dairy processors  
                    • Abattoirs  
                    • Big/Small  
                    • …|
| Retailing           | • Butchers  
                    • Supermarkets  
                    • Restaurants  
                    • Markets  
                    • Public sector (schools, hospitals, etc.)  
                    • Exporters/importers  
                    • Urban/rural  
                    • …|
| Consumption         | • Consumers  
                    • Poor/rich  
                    • Urban/rural  
                    • …|
| Private services    | • Private extension services  
                    • Sector associations  
                    • Veterinarians  
                    • Controllers (veterinarians, food safety, etc.)  
                    • Finance providers  
                    • Certification bodies |
| Government/          | • Public extension services  
                    • Tax collectors  
                    • Control and safety standards services  
                    • Ministries  
                    • Research |
| public services      |                                                        |                                                        |
Annex 2. List of selected tools for further VC analysis and development

General value chain tools

FAO - Developing sustainable food value chains – Guiding principles
http://www.fao.org/3/a-i4012e.pdf

FAO - Methodological Toolkit for Promoting Business Partnerships in Agrifood Chains

IFAD - IFAD value chain toolkits
https://www.ifad.org/topic/value_chain/overview

GIZ - ValueLinks Manual - The Methodology of Value Chain Promotion

GIZ - Guidelines for Value Chain Selection

ILO - Value chain development for decent work – How to create employment and improve working conditions in targeted sectors

ILO - Guidelines for Value Chain Selection – Integrating Economic, Environmental, Social and Institutional Criteria

ILO - An operational guide to Local Value Chain Development

International Trade Center – online market analysis tools (Trade Map, Market Access Map…)
http://legacy.intracen.org/marketanalysis/default.aspx

USAID – Value Chain Development Wiki
https://www.microlinks.org/good-practice-center/value-chain-wiki

ACIAR - Making Value Chains Work Better for the Poor: A Toolbook for Practitioners of Value Chain Analysis

CIAT - LINK methodology: A participatory guide to business models that link smallholders to markets

ARD - Social and Environmental Sustainability of Agriculture and Rural Development Investments: A Monitoring and Evaluation Toolkit
Nutrition

Value Chains for Nutrition

Improving Nutrition through multisectoral approaches

A Market Analysis and Decision Tree Tool for Response Analysis: Cash, Local Purchase and/or Imported Food Aid?

Food safety and quality

Food Safety Risk Analysis – A Guide for National Food Safety Authorities
http://www.fao.org/3/a-a0822e.pdf

Guide to good farming practices for animal production food safety

Food loss and waste

Toolkit: Reducing the Food Wastage Footprint

Gender and youth tools

Developing gender-sensitive value chains. A guiding framework
http://www.fao.org/3/a-i6462e.pdf

Review of Gender and Value Chain Analysis, Development and Evaluation Toolkits
https://cgspace.cgiar.org/bitstream/handle/10568/35656/Iirimanual_10.pdf?sequence=1

Gender in Value Chains - Practical Toolkit to Integrate a Gender Perspective in Agricultural Value Chain Development

Maximising Impact of Youth Entrepreneurship Support in Different Contexts - Background Report, Framework and Toolkit for Consultation

http://www.ilo.org/ipecinfo/product/download.do?jsessionid=d624188be882ee72d2cca9c2981286123 3fe7db2b55ad703daca56ec6e957388.e3aTbhuLbNmSe34MchaRahaKbhv0?type=document&id=2799

Monitoring and Evaluation

DCED Standard for Results Measurement
http://www.enterprise-development.org/measuring-results-the-dced-standard/

Policy

FAO: Value Chain Analysis for Policy Making: Methodological Guidelines and country cases for quantitative approaches

Sustainability and environment

LEAP (Livestock Environmental Assessment and Performance) technical guidance documents for understanding the environmental performance of livestock supply chains

IFAD How to Do: Climate Change Risk Assessments in Value Chain projects
https://www.ifad.org/documents/10180/30b467a1-d00d-49af-b36b-be2b075c85d2

Social and Environmental Sustainability of Agriculture and Rural Development Investments: a Monitoring and Evaluation Toolkit

Guide to PAS 2050 – How to Assess the Carbon Footprint of Goods and Services

Greenhouse gas emissions from ruminant supply chains: a global life cycle assessment

Greenhouse gas emissions from pig and chicken supply chains: a global life cycle assessment

Livestock specific tools

Development of integrated multipurpose animal recording systems
http://www.fao.org/3/a-i5702e.pdf

Phenotypic characterization of animal genetic resources

Good practices for the feed industry – implementing the Codex Alimentarius Code of Practice on good animal feeding

Eleven ways to improve animal marketing
https://publications.cta.int/media/publications/downloads/1810_PDF_6goMgLd.pdf
Livestock commodities tools

Technical and investment guidelines for milk cooling centres
http://www.fao.org/3/a-i5791e.pdf

Small-scale Poultry Production: Technical Guide
http://www.fao.org/3/a-y5169e.pdf

Decision Tools for family poultry development
http://www.fao.org/3/a-i3542e.pdf

Guide to good dairy farming practice
http://www.fao.org/docrep/014/ba0027e/ba0027e00.pdf

Good practices for the meat industry
http://www.fao.org/3/a-y5454e.pdf

Goat Value Chain Toolkit: A Guideline for Conducting Value Chain Analysis in the Goat subsector

Animal health and zoonotic diseases

http://www.fao.org/docrep/014/i2198e/i2198e00.pdf

Designing and implementing livestock value chain studies – A practical aid for Highly Pathogenic and Emerging Disease (HPED) control

Pastoralism

Improving governance of pastoral lands
http://www.fao.org/3/a-i5771e.pdf

Moving herds, moving markets: Making markets work for African pastoralists
https://publications.cta.int/media/publications/downloads/1778__PDF_Moving_herds_moving_markets_4.pdf?

PPPPs

IFAD How to do: Public – Private – Producer-Partnerships in Agricultural Value Chains
https://www.ifad.org/documents/10180/998af683-200b-4f34-a5cd-fd7ffb999133

Value chains portal and examples

Sustainable Food Value Chains Knowledge Platform
Value Chains Knowledge Clearinghouse
http://tools4valuechains.org/
Annex 3. Key issues for value chain mapping and analysis

(Sub)sector and commodities (for [sub]sector characterization and value chain selection)

- key priority subsectors of the livestock sector (cattle, goat, sheep, pig, poultry [chicken, duck], camel, buffalo, etc.); main commodities of priority sectors (meat, milk, eggs, wool, leather);
- additional role and functions of livestock (e.g. draught power, capital assets, fertilizer, status etc.) and trade-offs to be considered;
- market data and trends, including domestic and international current demand and forecasts, consumer preferences and market requirements.
- economic relevance of the (sub)sector in terms of numbers, production volumes, employment, nutrition and contribution to GDP, and other socio-economic factors and trends.
- overall understanding of the sector (policies, actors, stakeholders, production stages and systems, etc.).

End-market (for value chain selection and end-market analysis)

Description of market

- current demand for commodities, in local, domestic and export markets; growth forecasts for the next 10 years;
- main consumers in the end-markets: various market segments; market locations, e.g. high-end urban consumers, local rural markets; market channels, e.g. export, regional, wholesale markets;
- consumption habits and preferences; other trends and dynamics, e.g. branding strategies, marketing policies;
- niche and high-end-markets to be developed, e.g. organic, free-range chicken; packaged urban meat products;
- relevant trade agreements (regional, international) and other factors that influence markets and market access.

Growth and competitiveness

- growth opportunities within each market segment;
- key players in the markets (including competitors and potential substitutes);
- existing and potential competitors, e.g. imports, other supply chains;
- key success factors in markets, e.g. reliable quality supply, proximity to markets, established reputation, market drivers and requirements;
- the main constraints faced by producers and processors in accessing markets.

Economic analysis and competitiveness

- main costs involved in the value chain from production through to distributions – labour, inputs, transport, transactions;
- pre- and post-harvest losses;
- prices at the various steps of the chain, and volumes traded;
- consumer prices at various end-markets;
- seasonal and annual fluctuations in prices; seasonal variations in supply;
- quality specifications and certification requirements.
Production

Core value chain

Characterization of production

- livestock production systems and conditions (e.g. solely livestock production [landless or grassland-based systems] or mixed farming [rainfed or irrigated]) and maps with production areas;
- scale of production (e.g. land area, livestock holding); total production from each farming system; seasonality of production;
- other services provided by livestock (manure, labour, collateral, ecosystem services, other products [leather, milk and meat]);
- main producers – small-scale farmers, pastoralists, and medium/large farms – and their numbers;
- characteristics of the small-scale producers – socio-economic conditions, food security;
- eventual specialization of roles among small-scale producers (breeders, fatteners);
- other sources of income (other crops, on- and off-farm employment);
- gender-differentiated roles and responsibilities in production.

Governance, incentives and capacities

- organization of farmers into cooperatives or producer organizations; role of community leaders and other relevant actors in the community;
- incentives and behaviour of livestock keepers at market; how do smallholders access markets and make sales – spot markets, contracts and agreements;
- attitudes and coping mechanisms related to risk; food consumption preferences; access to land, labour, capital, information, support systems, etc;
- capacities and resources available to small-scale producers – financial, educational, natural resources (land, water, etc.), including storage capacity;
- barriers faced by small-scale producers in entering the value chain, and how to overcome them.

Production and technology

- production practices;
- level of technology and innovation used in production;
- main challenges faced by livestock producers, e.g. access to quality inputs, suitable, quality breeds, animal health, lack of access to markets and market information, climate change impacts;
- gender-differentiated constraints, including access to production inputs and resources.

Economic and financial analysis

- livestock production consumed, maintained (stored) and sold;
- cost structure of production and pricing; different market channels and pricing;
- volumes and value of production output – aggregated by producer group (i.e. mixed small-scale producers, pastoralists, medium/large farms);
- average yield per unit of activity (body weight at a given age, annual egg or milk production, etc.); average productivity of small-scale producers;
- revenues and gross margins; main cost and profit drivers;
- losses during production;
- quantification of labour for livestock activities – household members or hired workers;

4 http://www.fao.org/docrep/v8180t/v8180t0y.htm
• off-farm sources of income and expenses.

Support functions and enabling environment

• role of community associations and producer groups in livestock production; presence, role and capacity of producer associations and apex bodies; services and support provided to farmers by these bodies; support received; capacity of partners;
• other services available at the community and local level in terms of inputs, production, training, market information, marketing; pricing and nature of services offered;
• supporting sanitary and phytosanitary standards and regulations, and services (including financial);
• climatic conditions and climate change impacts; other environmental impacts on production;
• infrastructure available and needed;
• relevant policies and strategies in place to support production, e.g. collective action, capacity building, etc.

Inputs

Core value chain

Characterization of inputs
• main supplies provided (suitable breeds, feed, veterinary drugs, artificial insemination, etc.);
• type and nature of suppliers – private sector or public; location and distance of suppliers;
• farmers’ access to supplies – directly, through intermediaries, via government support and extension workers, through cooperatives?
• reliability of inputs supply, and growth envisaged to keep pace with animal production;
• trade-offs considered when purchasing inputs;
• main constraints faced by producers in accessing inputs.

Governance, incentives and capacity
• embedded services provided by input suppliers (i.e. use of inputs, cost effectiveness, choice of inputs, etc.).
• payment facilities – credit etc. – offered.
• labelling and packaging available and appropriate for small-scale producers.

Economic and financial analysis
• number of input suppliers;
• volume and value of inputs;
• inputs quantity (animal feed, veterinary drugs, etc.) per unit of output;
• price and/or range of public and private input supplies;
• cost structure of input supplies; different markets channels and pricing;
• revenues and gross margins; main cost and profit drivers.
Support functions and enabling environment

- extension services and support provided by public programmes for input suppliers and access by small-scale producers;
- crowding in of private sector in service provision;
- financial and credit facilities available for suitable inputs;
- other services available (public or private), including research and development facilities, especially with regards to animal genetics and animal health;
- infrastructure available and needed;
- policies and strategies in place to promote development of local input supply market (e.g. taxes on inputs, private sector participation, financial incentives etc.).

Aggregation

Core value chain

Characterization of aggregation
- main constraints faced by the producers in marketing and selling their produce;
- type and nature of markets; distances to market;
- contractual agreements;
- mode of produce sales – individually, through cooperatives, to traders, directly, spot market, contract agreements; modes of transaction;
- main actors involved in aggregation – large farms, traders, farmers themselves, cooperatives;
- condition of access roads and routes; transport used and quality of transport (e.g. time taken, viability of cold chains, storage, etc.); losses incurred.

Governance, incentives and capacities
- services provided by traders, e.g. market information, market requirements, market forecasts, and credit; cost of services;
- functions (e.g. fattening, aggregation, marketing, storage), incentives and capacities;
- standards and requirements.

Economic analysis
- transaction costs;
- cost structure of aggregation and pricing; different markets channels and pricing;
- revenues and gross margins; main costs and profit drivers;
- volumes and value of aggregation for different market channels;
- losses during aggregation.

Support functions and enabling environment

- traders’ associations and apex bodies; services and support provided to members; support received by associations;
- financial services available;
government policies and mechanisms in place to promote marketing of livestock commodities; marketing policies, boards and market regulations in place; infrastructure available (e.g. collection points, cold chains, storage, road access, fattening stations) and infrastructure needed.

**Processing**

*Core value chain*

**Characterization of processors**
- type of processing of livestock products;
- characterization of processors, e.g. small enterprises, large firms, international companies;
- sourcing of raw material and inputs, e.g. reliability, quality requirements;
- structure of the supply chain, e.g. integrated, contract agreements with producers and traders, etc.;
- investment required for processing.

**Governance, incentives and capacity**
- incentives and capacities of the processors;
- industry standards and requirements, and compliance;
- demand and end-market orientation by processors;
- resources, including financial, available to processors;
- main constraints and limitations faced.

**Economic analysis**
- number of processors;
- volumes and value of processing – aggregated and categorized;
- investments;
- cost structure of production and pricing; different market channels and pricing;
- losses during processing;
- productivity and production capacity; storage capacity;
- competitiveness of processors as compared with competitors;
- revenues and gross margins; main cost and profit drivers;
- employment creation and wages.

**Support functions and enabling environment**
- professional and sectoral associations supporting processors, and services provided;
- support services, including financial services available (e.g. credit, research, testing, inputs such as packaging);
- main infrastructural limitations to processing (e.g. cost and reliability of electricity, access to markets, cold chain facilities);
- sanitary and phytosanitary standards and regulations, and services (including financial) provided;
policies and strategies in place to support added value and processing; and to attract public and private investments;
- infrastructure requirements (access to roads, abattoirs, processing plants, cold chains, storage etc.);
- special attention to be paid to gender-based constraints – such as time poverty, physical skills, and limited mobility – given the particular importance of women in processing.

Distribution

Core value chain

Characterization of distribution
- market channels used;
- wholesalers and retailers, and their location;
- other key actors in distribution;
- structure of supply chain (payment terms, delivery conditions, services provided);
- standards and requirements, and compliance;
- storage and other facilities.

Governance, incentives and capacities
- incentives and capacities of wholesalers, retailers and other distributors;
- services and business linkages to end-consumers, lead firms and producers/traders.

Economic analysis
- number and size of wholesalers and retailers;
- volume and value in each distribution channel (including wholesalers vs. retailers);
- cost structure and pricing;
- storage capacity;
- revenues and gross margins; main cost and profit drivers.

Support functions and enabling environment

- relevant livestock policies and programmes promoting domestic markets and access to international markets;
- export support measures (tax exemptions or subsidies);
- sanitary and phytosanitary standards and regulations;
- marketing policies and regulations;
- policies for investment in market promotion, customs and export promotion as well as development of domestic markets and related tax regulations.
Annex 4. Examples of outcome and impact indicators for livestock value chain development projects

<table>
<thead>
<tr>
<th>Outcome indicators</th>
<th>Impact indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td><strong>Impact indicators</strong></td>
</tr>
<tr>
<td>• Repartition of value chain functions among actors in the chain</td>
<td>• Importance of income from livestock activities relative to total household income</td>
</tr>
<tr>
<td>• Repartition of value added across the steps of the value chain</td>
<td>• Monetary income (household level, local currency per year)</td>
</tr>
<tr>
<td>• Continuity of buyer-supplier relationships</td>
<td>• Income “in kind” (if relevant)</td>
</tr>
<tr>
<td>• Average size of orders from buyers</td>
<td>• Number of participants in value chain</td>
</tr>
<tr>
<td>• Stability of the prices received</td>
<td>• Number of people employed in value chain activities (or related activities)</td>
</tr>
<tr>
<td><strong>Governance and business linkages</strong></td>
<td>• Diminished income instability (qualitative, based on more detailed criteria)</td>
</tr>
<tr>
<td>• Number of well-functioning producer or processor groups</td>
<td>• Improved food security and nutrition (qualitative, based on more detailed criteria)</td>
</tr>
<tr>
<td>• Participation of small-scale producers in these groups</td>
<td></td>
</tr>
<tr>
<td>• Degree of stability of groups</td>
<td></td>
</tr>
<tr>
<td>• Level of integration of the value chain</td>
<td></td>
</tr>
<tr>
<td>• Number of actors linked to Market Information Systems</td>
<td></td>
</tr>
<tr>
<td>• Extent of written sales contracts or partnerships</td>
<td></td>
</tr>
<tr>
<td>• Number of women and men participating in gender-sensitive capacity-building sessions</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Practices and technologies</td>
<td>Standards and certification</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Percentage of beneficiaries of capacity-building sessions.</td>
<td>• Volume of products handled under specific standards or certification</td>
</tr>
<tr>
<td>• Extent of adoption of specific practices or technologies in terms of number of farmers or animals</td>
<td>• Degree of compliance with specific standards</td>
</tr>
<tr>
<td></td>
<td>• Reduction of animal mortality</td>
</tr>
<tr>
<td></td>
<td>• Increased productivity per animal (milk, eggs, growth, etc.)</td>
</tr>
<tr>
<td></td>
<td>• Increased productivity at producer level (number of animals sold, milk produced over the year, etc.)</td>
</tr>
<tr>
<td></td>
<td>• Changes to carrying capacity of pastures and rangelands</td>
</tr>
<tr>
<td></td>
<td>• Quantity of natural resources (e.g. volume, hectares, etc.)</td>
</tr>
<tr>
<td></td>
<td>• Quantified level of pollution or waste</td>
</tr>
<tr>
<td></td>
<td>• Measurable human or animal health improvements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial services</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Proportion of actors with loans, and value of loans</td>
</tr>
<tr>
<td>• Proportion of actors adopting insurance systems</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other support services</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Proportion of animals vaccinated</td>
</tr>
<tr>
<td>• Proportion of animals inseminated with AI</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Quantification of infrastructure constructed (km of roads, number of modern, hygienic dairy plants, etc.)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Policies and regulations</strong></td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>• Legal and regulatory framework established to oversee the governance of the value chain</td>
</tr>
<tr>
<td>• Legal and regulatory framework established to protect traditional access rights</td>
</tr>
<tr>
<td>• Legal and regulatory framework established to improve feed safety</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>