



# DAIRY AS MEANINGFUL PROPOSITION

**AN INTEGRATED VALUE-CHAIN APPROACH TO CREATE AND FOSTER A SUSTAINABLE, INCLUSIVE AND RESILIENT DAIRY SECTOR IN LOW AND MIDDLE-INCOME COUNTRIES**

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# CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>3</b>
<b>INTRODUCTION</b>	<b>7</b>
<b>GLOBAL DAIRY MARKET OUTLOOK</b>	<b>8</b>
<b>KEY OPPORTUNITIES TO DEVELOP DAIRY SECTORS</b>	<b>9</b>
<b>A VISION FOR COMPETITIVE AND SUSTAINABLE DAIRY SECTORS</b>	<b>11</b>
<b>I. PROFESSIONAL AND CLIMATE-SMART DAIRY PRODUCTION MODELS</b>	<b>13</b>
<b>II. HIGH QUALITY AND SEGMENTED SERVICES</b>	<b>17</b>
<b>III. INTEGRATED VALUE CHAINS</b>	<b>21</b>
<b>IV. EFFECTIVE GOVERNANCE</b>	<b>23</b>
<b>TOWARDS MORE COMPETITIVE AND SUSTAINABLE DAIRY SECTORS</b>	<b>25</b>
<b>A CALL TO ACTION</b>	<b>26</b>





# EXECUTIVE SUMMARY

Dairy development is crucial to meet the global demand for food. More than 6 billion people around the world regularly consume milk and dairy foods. Dairy products provide an important source for high-quality protein and micronutrients. With 133 million (predominantly family-based) dairy farms around the world, the dairy sector supports the livelihoods of 1 billion people. These impressive figures will increase as global demand continues to grow. This growth will take place in low- and middle-income countries in particular.

## OVERVIEW OF THE CHALLENGE

Meanwhile, the global dairy sector faces several challenges. For the majority of family farmers, it remains a challenge to earn a decent livelihood with dairy production. Particularly in low- and middle-income countries, there is a mismatch between the existing producer base and the growing markets for high-quality dairy products. This is mainly caused by lack of professionalization, lack of integration with dairy processors, high transaction costs and poor milk quality.

The sector is also a significant contributor to greenhouse gas emissions (GHG), and the most inefficient systems exist in low- and

middle-income countries. There is a strong correlation between output per cow and emissions intensity. In other words, if cows become more productive, the emissions or land use per unit of milk will decrease.

With growing domestic consumption in low- and middle-income countries, the question arises about what type of production growth path should be pursued. This growth creates both risks and opportunities for inclusive economic development, sustainability and climate change. The expansion of current inefficient production and value chain systems in these countries will further exacerbate issues of poverty, cost inefficiency, poor milk quality, inefficient land use and climate change. Meeting future demand with increased production from industrial countries may respond to some of these challenges. However, it will not provide an answer to the climate impact of current inefficient production systems and neither will it enable the reduction of poverty. Furthermore, as demand for fresh dairy products will increase, processors will miss important market opportunities if they do not make timely investments in the development of the supply chain.

COMPETITIVENESS	SUSTAINABILITY
<b>Market-driven:</b> taking advantage of market opportunities <b>Cost-efficiency:</b> realizing a low cost-price for dairy products in support of food and nutrition security <b>Value-driven:</b> promoting quality and value addition	<b>Inclusiveness:</b> offering economic opportunities for workers and small and medium-scale farmers, including youth and women <b>Resilience:</b> reducing risks related to price volatility and climate variability <b>Environmental and social performance:</b> mitigating adverse impacts on climate, animal welfare, biodiversity, water, land, workers, and communities

### OUR VISION FOR THE FUTURE

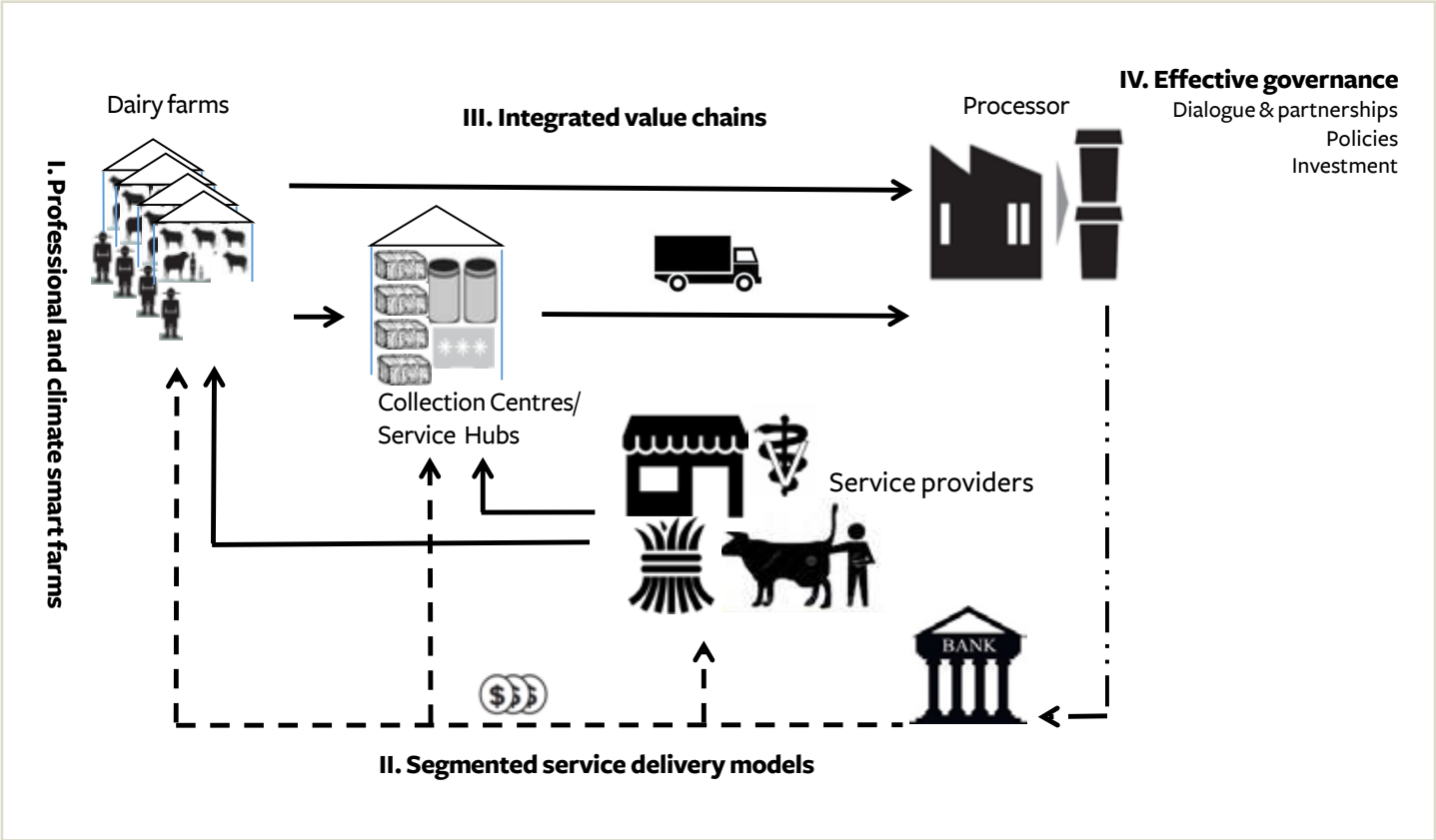
At Solidaridad, we see opportunities to transform the dairy sector of low- and middle-income countries into a competitive and sustainable sector, hereby building the capacity of many countries to take care of their own dairy production at the local level. In the future, national dairy sectors should be able to serve consumers consistently with safe and quality dairy products at affordable prices. The dairy sector has to be built upon productive and efficient farms and value chains that generate sufficient value to enable re-investment in further improvements.

A sustainable, inclusive dairy sector also has to balance competitiveness with sustainability. It should contribute to

employment opportunities and resilient livelihoods of farming households, including women and youth. A sustainable sector is also able to mitigate negative social and environmental risks, including climate change, across the value chain. Moreover, it is able to embed production systems within wider landscapes and communities, and to improve land productivity, hereby reducing the emission of greenhouse gases and pressure on available land.

### OUR SOLUTIONS

We believe that the way forward is to professionalize national dairy sectors of low- and middle-income countries. This transformation requires a holistic and coordinated context-specific strategy, with the following core building blocks:





### **I. Professional and climate-smart dairy production models: the promotion of professional, productive and efficient family farming models**

The first component refers to the prioritization of dairy farming models that can support the transition towards a more professional and climate-smart dairy sector. The transition towards more business-oriented farmers should result in increased milk production per animal and farm, improved milk quality and increased efficiency. The national context determines the potential for a business case for the (family) dairy farm and influences the professionalization level of farmers to manage dairy as a business.

### **II. Quality and segmented service provision: the introduction of scalable service delivery models of quality services for a segmented production base**

The second component concerns the provision of services needed to develop the professional and climate-smart production models like cooling and collection, input supply, veterinary and AI services, and access to finance. The accessibility and quality of services is a key driver for sector transformation.

### **III. Integrated value chains: the establishment of direct and stable relationships between farmers and dairy processors based upon a market pull for quality products**

Dairy processors play a pivotal role in driving the transformation of dairy sectors from a market-based approach. Secured market access is an important incentive for farmers to invest in productivity, quality and sustainability. The secured market and the payment system can also facilitate the access to services, including short-term (input services, animals) and long-term finance (farm investments). Despite the challenges, investing in more integrated value chains can have two important benefits in the medium to longer term, especially in a highly competitive market:

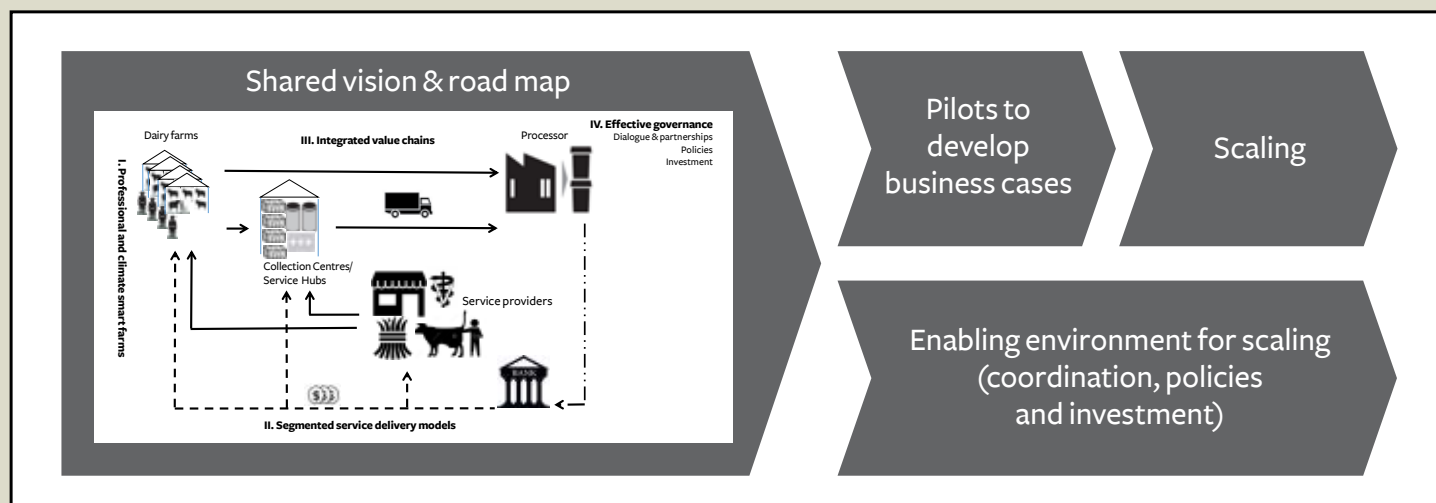
- Increased and stable access to high-quality milk at lower costs (crucial for the fresh dairy market)
- Increased market reputation and license to operate within a country

### **IV. Effective governance: coordination and alignment of sector stakeholders, conducive regulation and sector-wide investments to improve sector-wide performance**

Price volatility, unaffordable services for farmers, and a lack of transparency are examples of systemic issues which can undermine investments and hereby the transformation of the dairy sector. This cannot be done by individual companies alone: their potential impact may be limited and result only in some 'islands of success', while sector transformation requires a sea of change.

Governments, possibly with support from bilateral or multilateral donors, have a leading role in creating the enabling conditions. They should pursue a long-term perspective, based upon a shared sector





vision, to create the systemic changes that allow for sector-wide transformation.

Solidaridad calls for comprehensive sector strategies covering all four components. A central feature of this strategy is to develop viable business cases and investment propositions for production, service delivery and value chain models. Commitment from the dairy industry to invest in these models is crucial. Dairy processors, in particular, can create the conditions in which farmers, service providers and financial institutions are willing to invest in more professional models. Public sector, impact investors, knowledge institutes and development partners can co-create and co-invest with the industry to share risks and ensure the availability of the required knowledge, technology and funding.

### **WE HEREBY INVITE YOU TO COLLABORATE WITH US IN BUILDING MORE COMPETITIVE, INCLUSIVE AND SUSTAINABLE DAIRY SECTORS.**

At Solidaridad, we aim to contribute to the sustainable and inclusive development of national dairy sectors. In our holistic value chain approach, we tackle the entire dairy supply chain and work with a variety of stakeholders to ensure a competitive and sustainable dairy sector. In this process, we fulfil the role of programme manager, knowledge partner, facilitator of the multi-stakeholder process, pilot implementor, business developer, and matchmaker with impact investors for further upscaling. We have active dairy programmes running in, among others, Bangladesh, Myanmar and Tanzania. Dairy is part of our livestock and landscape programmes in countries like India, Kenya, Ethiopia, Paraguay and Nicaragua.

### **PILOTING SCALABLE MODELS WHILE BUILDING THE ENABLING ENVIRONMENT FOR SCALING**

Our years-long experience has taught us that a holistic and coordinated process of sector transformation requires facilitation, management, and allowing space for sector dialogue between key stakeholders. A good starting point for such a process is initiating (pilot) projects with dairy companies and/or investors, based on a shared vision.

The development of the dairy sector thus requires the dairy industry to invest in integrated supply chains, the public sector to invest in the enabling policies and investment mechanisms, and the service sector to invest in viable service delivery models. The availability of new business models and an enabling environment for scaling are conditional for sector transformation.

# INTRODUCTION

**Dairy is crucial to meet the global demand for food, but its production faces various challenges related to poverty and climate change. More than 6 billion people around the world regularly consume milk and dairy foods. Dairy products provide an important source for high-quality protein and micronutrients.**

With 133 million dairy farms around the world, the dairy sector supports the livelihoods of 1 billion people. These impressive figures will increase as global demand continues to grow. Meanwhile, the global dairy sector faces several challenges. For the majority of farmers, it remains a challenge to earn a decent livelihood with dairy production. In most low- and medium-income countries, the low productivity of dairy farms contributes to sustained poverty of farming households. There is also a mismatch between the existing producer base and the growing markets for high-quality dairy products, mainly caused by high transaction costs and poor milk quality. The sector is also a significant contributor to greenhouse gas emissions (GHG). In low- and medium-income countries, in particular, dairy production has a high carbon footprint. Reducing the footprint is crucial to meet global climate change targets.

With growing domestic consumption and production in low- and middle-income countries, the question arises what type of growth path should be pursued. A business as usual scenario of expanding the current inefficient production and value chain systems will further exacerbate poverty, cost-inefficiency, poor milk quality, inefficient land use and climate change. Alternatively, growing demand offers opportunities for inclusive economic development with reduced environmental footprints, including the mitigation of GHG emissions. Alternative scenarios will, however, require a fundamental shift in how countries with a dairy sector organize production, processing and trade.

Solidaridad believes that it is time for real transformational change. Solidaridad has programmes and partnerships across Asia and Sub-Saharan Africa promoting better models for dairy production, value chains and service delivery. Our successes and failures show the need for a more ambitious transformational agenda. Business as usual is not an option. The transition towards more competitive, inclusive and sustainable national dairy sectors requires a holistic and coordinated strategy regarding production, value chains, service provision and sector governance.

This paper offers a strategic framework to guide the transformation of national dairy sectors. It presents Solidaridad's vision on what is needed to build more competitive, inclusive and sustainable sectors. It also proposes concrete steps to engage in a collaborative transformation process. Solidaridad invites stakeholders to collaborate with us in transforming dairy sectors.



# GLOBAL DAIRY MARKET OUTLOOK

Approximately 47% of global dairy production is produced in low- and medium-income countries.<sup>1</sup> By region, Europe takes the lead in global milk production, followed by Asia and North America. At country-level, the United States is the world’s largest milk producer, followed by India, Brazil, Germany and China.

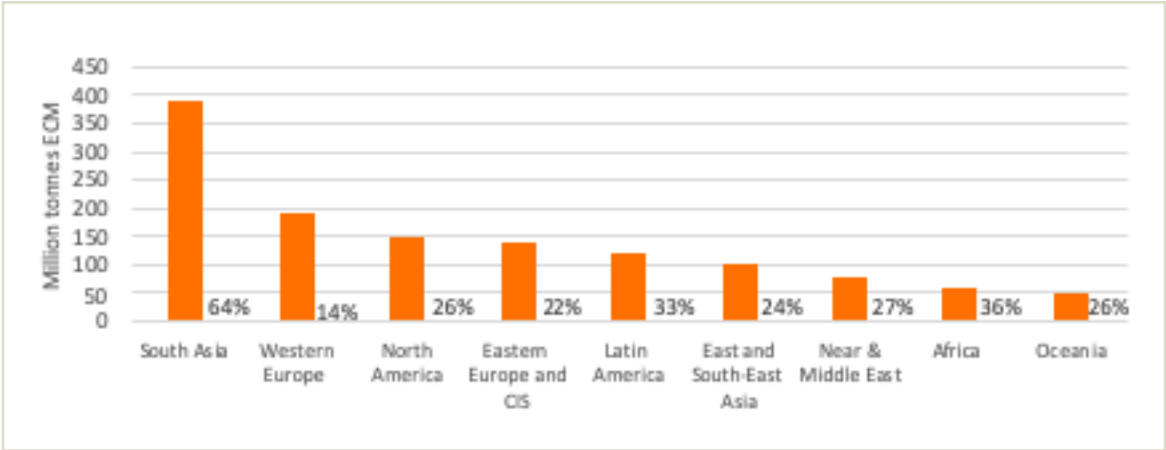
The EU-28, Argentina, Australia, New Zealand and the United States are the key exporters. Together they account for around 80% of global dairy exports.<sup>2</sup> While some low- and medium-income countries are self-sufficient, e.g. India, most others have a milk deficit and partly depend on imports.<sup>3</sup>

Low- and medium-income countries show high growth figures in dairy production. Since the 1970s, most of the expansion in milk production has been in South Asia. Whereas East Asian countries do not have a long history of milk consumption, China has more than tripled its domestic milk production volume since 2000. Another region of growing importance is Eastern Africa. It currently constitutes more than half of total milk production in Sub-Saharan Africa, and a vibrant smallholder farming sector contributed to milk production growth of 37% over the past decade.<sup>4</sup>

Increasing consumption is expected to further spur the growth of production in developing countries. The total world milk production is set to increase with 35% (304 million tonnes) by 2030.<sup>5</sup> The majority of the milk production is anticipated to come from low- and middle-income countries by 2030 (see Figure 1). South Asia is expected to be the fastest growing region (with 64%), followed by Africa (36%) and Latin America (33%).

Domestic consumption is the main driver for the growing production. World consumption of fresh dairy products and processed dairy products is expected to grow over the next decade annually by 2.1% and 1.7%, respectively.<sup>6</sup> In the coming decade, developing countries will consume 67% of fresh dairy products. Driven by increasing urbanization and an expanding middle class, Asia will become the largest market for fresh dairy products with a 73% share. The demand for processed dairy products is also expected to increase significantly in Asia. In Sub-Saharan Africa, fresh dairy products currently account for more than 90% of total dairy consumption. In light of continued income growth and urbanization, the demand for dairy products is projected to grow with 2.6% per year until 2027.

**Figure 1:** The expected milk production by region in 2030 and % change in milk supply compared to 2017



Source: IFCN (2018) IFCN Dairy Outlook 2030

1 FAOSTAT, 2017 figures  
2 AHDB Dairy (2018), World milk deliveries – Selected regions  
3 OECD-FAO (2018), Agricultural Outlook 2018-2027  
4 OECD/FAO (2016), Agricultural Outlook 2016-2025  
5 IFCN (2018), IFCN Dairy Outlook 2030  
6 OECD/FAO (2017), “OECD-FAO Agricultural Outlook”, OECD Agriculture statistics (database)





# KEY OPPORTUNITIES TO DEVELOP DAIRY SECTORS

The professionalization of dairy sectors can offer solutions to meet future demand, realize poverty reduction and employment creation, and mitigate adverse climate change and land-use effects.

## INCREASED FOOD AND NUTRITION SECURITY

Increasing consumption of fresh dairy products offers an interesting business case for further development of national dairy sectors. With already more than 6 billion people around the world regularly consuming milk and dairy foods, the consumption is only expected to increase. Most of this growth will take place in low- and middle-income countries. Expected further development of the food processing industry in these countries also offers opportunities to develop the local sourcing of milk for dairy ingredients. This development can contribute significantly to improved food and nutrition security.

## POVERTY REDUCTION AND EMPLOYMENT

Dairy production can have a significant positive impact on poverty reduction and employment generation. With 363 million dairy cows on 133 million dairy farms around the world, the global dairy sector supports the livelihoods of 1 billion people (approx. 600 million living on-farm and 400 million working in the value chain).<sup>7</sup> A recent FAO study concluded that dairy cow ownership and/or improvement of

dairy cow production consistently make a significant contribution to poverty reduction, both at household and community levels.<sup>8</sup> There is strong evidence that engagement in dairy activities was the cause rather than the effect of higher household welfare. The dairy value chain studies showed that milk collection and distribution generated a considerable amount of direct and indirect employment. Dairy production can also boost other agricultural sectors through the manure it produces and markets it creates for the feed-relevant residues of these sectors. In other words, the development of dairy sectors has the potential to improve the livelihood opportunities of millions of smallholders and workers, including women and youth.

## CLIMATE EFFICIENT GROWTH

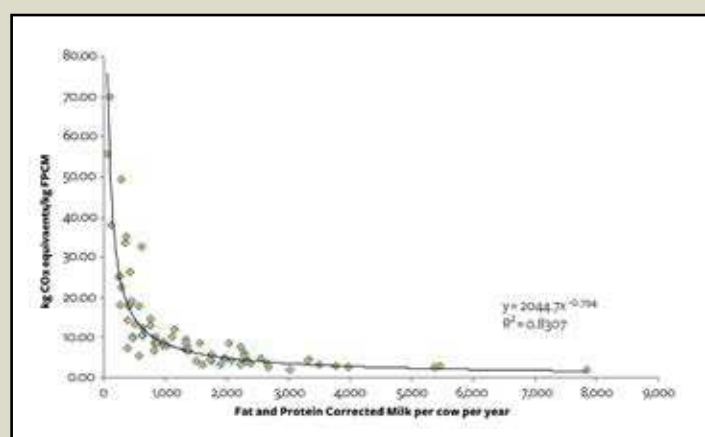
The development of dairy sectors in low- and middle-income countries offers opportunities to replace current climate inefficient production systems with more efficient systems. The importance of dairy production to socio-economic and nutritional outcomes must be balanced against the need for improved environmental outcomes. A key environmental issue is greenhouse gas emissions. Cattle milk production, processing and transportation are responsible for 1.4 gigatonnes CO<sub>2</sub>-eq, which corresponds to 2.9 percent of the total anthropogenic emissions.<sup>9</sup>

<sup>7</sup> FAO (2016), The Global Dairy Sector: Facts

<sup>8</sup> FAO, GDP and IFCN (2018), Dairy Development's Impact on Poverty Reduction. Chicago, Illinois, USA

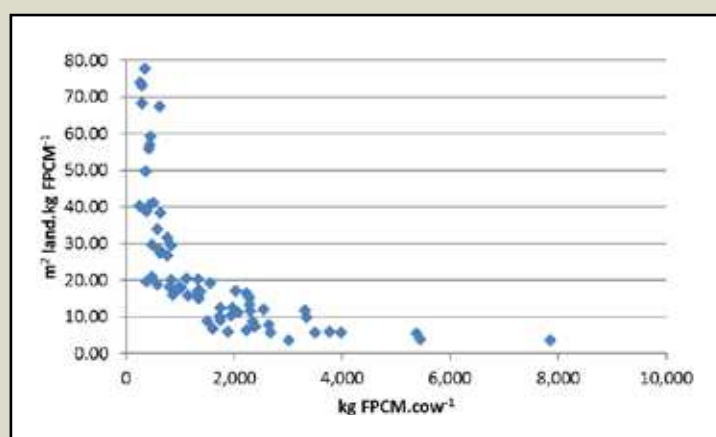
<sup>9</sup> These are 2005 reference figures. Source: Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. 2013. Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome

**Figure 2:** Relationship between milk productivity and emission intensity of milk (country averages)



Source: Gerber et al (2011) in Gerber et al (2013)

**Figure 3:** Relationship between productivity and land use intensity of milk (country averages)



Source: Solidaridad (2018)

A recent study by the FAO over the period of 2005-2015 has shown: 1) emissions have grown at a lower pace than consumer demand; and 2) the largest reductions in emission intensity occurred in low- and middle-income countries<sup>10</sup>. It shows that while the global dairy production has grown by 30% to meet consumer demand over the period of 2005-2015, the absolute emissions rose by 18% globally. The study reports GHG emission reductions in all regions of the world. On average, GHG emitted in the production of milk has decreased in 'emissions intensity' (i.e. emissions per unit of product) by almost 11% from 2.8 to 2.5 kg CO<sub>2</sub> equivalents per kg of product produced. Without the efficiency improvements made by the sector, total emissions from dairy would have increased by almost 38%.

The study also revealed that the largest reductions in emission intensity occurred in low- and middle-income countries with traditionally low productivity. While developed dairy geographies also reduced the intensity of emissions, the percentage improvement was not as substantial as these systems were already operating at much lower rates. This fact supports the argument that the major mitigation potential lies in the systems that operate at low productivity, hence, in low- and middle-income countries. As strong production growth in these countries seems to be an irreversible trend, a key opportunity is to ensure mitigation is achieved by transitioning to high productivity and climate efficient systems.

The graph on this page illustrates how differences in productivity explain the variation in emission intensity between countries.

It shows a strong correlation between output per cow and emissions intensity per unit of product produced.<sup>11</sup> In other words, if cows become more productive, the emissions per unit of milk will decrease. The gains are particularly high when transitioning from low productivity systems to medium productivity system. It shows how GHG emissions per kg FPCM can be decreased not only by increasing milk production but also by improving management practices. A feasibility study of the dairy sector in Oromia, Ethiopia by Solidaridad and Wageningen University, showed similar findings.<sup>12</sup> It calculated that a cow producing 3000 litres per year emits less than 4 times of GHG emissions per unit of milk than a cow producing 500 litres per year, which is in line with the general findings of Gerber et al. (2013). This reduction is mainly realized by an improved feed efficiency i.e. better feed and better feeding management.

## REDUCED PRESSURE ON LAND

A more professional dairy sector can also reduce significantly the pressure on land. The same study by Solidaridad showed a similar relationship between milk production and land use, as shown in figure 3. The reduction in land use comes from higher efficiency in feeding and improved land productivity. The land needed per litre of milk, for a cow producing 3000 litres per year, is about 75 % less than for a cow producing 500 litres. In other words, intensifying dairy production can mitigate issues of overgrazing and reduce the pressure on land and forests to meet market demands for dairy products. In the next sections we explain how it can be realized.

<sup>10</sup> FAO and GDP. 2018. Climate change and the global dairy cattle sector – The role of the dairy sector in a low-carbon future. Rome. 36 pp. Licence: CC BY-NC-SA-3.0 IGO

<sup>11</sup> Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. (2013), Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome

<sup>12</sup> Solidaridad (2018), From subsistence to professional dairy business: Feasibility study for climate-smart livelihoods through improved livestock systems in Oromia, Ethiopia





# A VISION FOR COMPETITIVE AND SUSTAINABLE DAIRY SECTORS

## A VISION FOR GROWTH

The growing demand for fresh milk and dairy products in many low- and middle-income countries drives investments in production. At Solidaridad, we believe today's context offers opportunities to build competitive and sustainable dairy sectors in these countries. A competitive sector is able to serve consumers consistently with safe and quality dairy products at affordable prices. It is built upon productive and efficient farms and value chains that generate sufficient value to enable re-investment in further improvement. A healthy sector balances competitiveness with sustainability. A sustainable sector is inclusive and contributes to employment opportunities and resilient livelihoods of farming households, including women and youth. A sustainable sector is also able to mitigate negative social and environmental risks across the value

chain and is able to embed production systems within wider landscapes and communities.

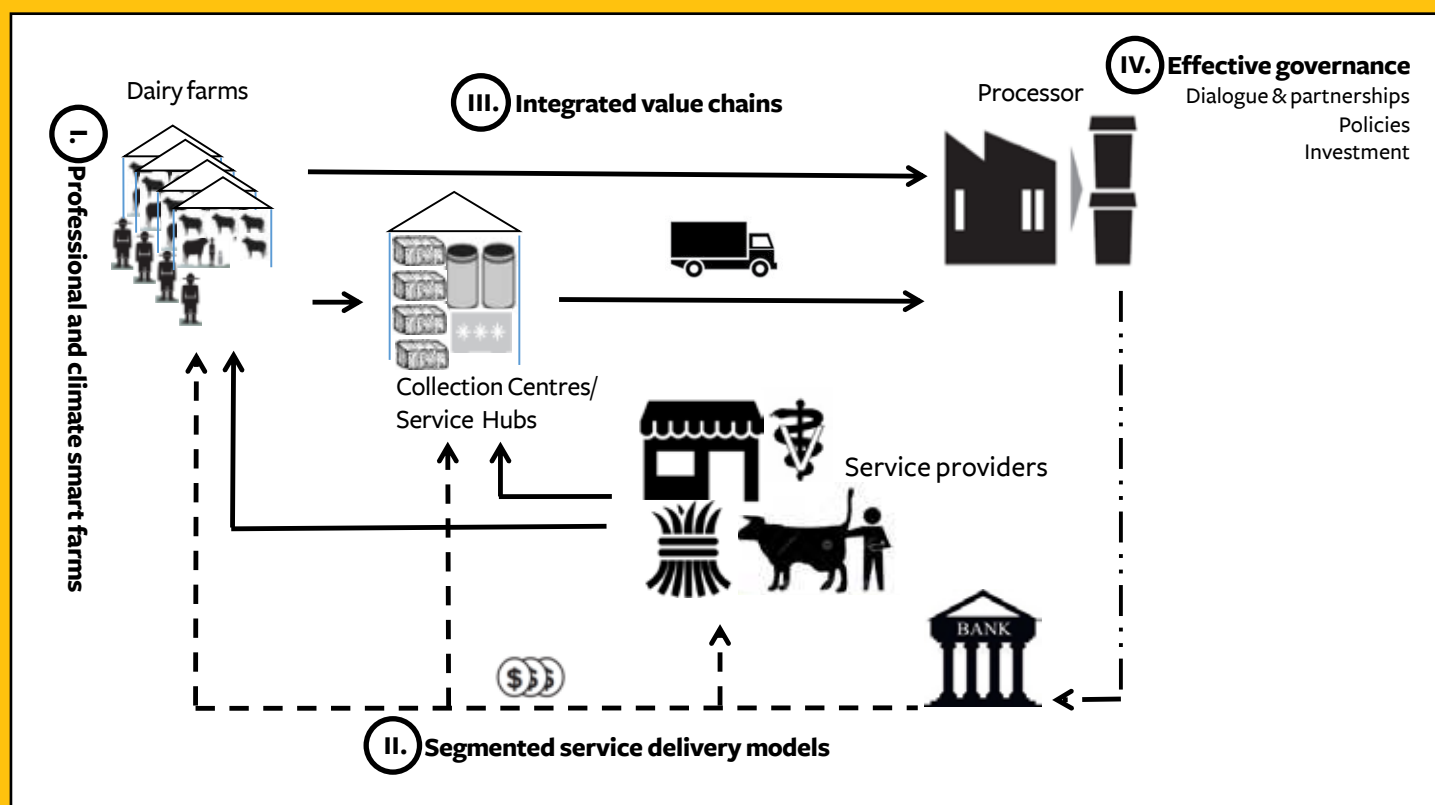
## FOUR COMPONENTS OF A SECTOR TRANSFORMATION STRATEGY

The development of a competitive and sustainable sector requires a coordinated and holistic transformation strategy. Scaling up individual projects alone is not enough. A sector transformation strategy should address the root causes of poor performance to create the systemic solutions that are valuable for the sector as a whole. This can also create the conditions to boost the success of individual value chain projects. Improving a sector as a whole requires alignment and collaboration by public and private actors.

COMPETITIVENESS	SUSTAINABILITY
<p><b>Market-driven:</b> taking advantage of market opportunities</p> <p><b>Cost-efficiency:</b> realizing a low cost-price for dairy products in support of food and nutrition security</p> <p><b>Value-driven:</b> promoting quality and value addition</p>	<p><b>Inclusiveness:</b> offering economic opportunities for workers and small and medium-scale farmers, including youth and women</p> <p><b>Resilience:</b> reducing risks related to price volatility and climate variability</p> <p><b>Environmental and social performance:</b> mitigating adverse impacts on climate, animal welfare, biodiversity, water, land, workers, and communities</p>



**Figure 4:** The four components to address for transforming national dairy sectors



To guide the transformation of national dairy sectors, Solidaridad proposes a model with four components. Sector transformation requires a consistent set of context-specific strategies and interventions across the four components. The components are:

- I. Professional and climate-smart dairy production models:** the promotion of professional, productive and efficient farming models
- II. Quality and segmented service provision:** the introduction of scalable service delivery models of quality services for a segmented production base
- III. Integrated value chains:** the establishment of direct and stable relationships between farmers and dairy processors based upon a market pull for quality products
- IV. Effective governance:** coordination and alignment of sector stakeholders, conducive regulation and sector-wide investments to improve sector-wide performance

Each component has different strategic options that will be explained in the next sections.



# I. PROFESSIONAL AND CLIMATE-SMART DAIRY PRODUCTION MODELS

The first component refers to the prioritization of dairy farming models that can support the transition towards a more professional and climate-smart dairy sector.

## **FROM SMALL TO MEDIUM-SIZED PRODUCTION MODELS**

A key question is what type of producer a sector should promote. This vision should correspond to the sector's objectives in terms of competitiveness (e.g. cost-efficiency and quality) and sustainability (e.g. inclusiveness and climate change mitigation). Different dairy production models and development paths could be prioritized.

A more evolutionary process is the development of existing small-scale, often subsistence, farms into increasingly more professional ones. The transition towards more business-oriented farmers should result in increased milk production per animal and farm, improved quality and increased efficiency. Experience shows that

professionalization of small-scale producers can be challenging as many constraints can slow down or block the wide-scale adoption of new practices. Constraints that can exist include cultural issues (e.g. lack of entrepreneurial attitude related to dairy production) and the lack of knowledge, time, resources, access to services and reliable market access. The consequent high transaction costs and business risks (e.g. supply guarantee, quality issues) can create disincentives for a dairy industry to invest in such development pathways.

An alternative approach is the introduction of new business models, such as medium-sized, commercial farms and various ways of clustering small and medium-sized farmers. These models allow for more sophisticated farming practices, technology adoption (including for cooling and milking) and value chain integration. However, the promotion of such models also requires an entrepreneurial attitude, knowledge, technology, capital and reliable markets.





## CASE BOX 1: THE FARMER'S BUSINESS CASE IN ETHIOPIA

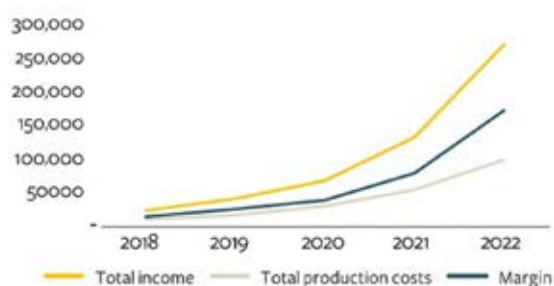
Solidaridad calculated the business case for small and medium-scale dairy farmers in Ethiopia. The starting point of all scenarios is the situation at farm-level before an intervention takes place. For the farmers, Solidaridad assessed two scenarios:

- 2/2 farm system (i.e. 2 cows each producing 2 litres a day) evolving to a 10/10 farming system
- 10/10 farm system growing to a 15/15 farming system

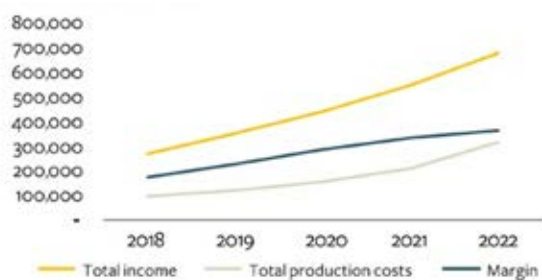
The scenarios included the adoption of various good practices that raises the productivity per cow. The financial model showed that evolving to a 10/10 farming system generates a 20 times higher gross income in five years. Cost increases follow income, but the margin remains relatively stable at about 60% with some small fluctuations. It also shows that while the farmer's business case is profitable from an operational point of view, cash flow is insufficient to finance its own growth. Hence the importance of access of finance.

In the second scenario, the medium-scale farmer starts with a much higher income and cash flow than a smallholder farmer. It showed a more gradual rise in income and costs when growing to a 15/15 farm system. Costs are variable and increase as income increases; the margin remains relatively stable at about 60% decreasing slightly during later years due to increased labor costs and less available grazing land to accommodate increased fodder (production) costs. In this scenario, external finance is also needed to make the needed investments.

Income and margin of a smallholder farmer (2/2) moving to a 10/10 farming system (in BIRR)



Income and revenue breakdown of a mid-scale farmer (10/10) growing to a commercial farm (15/15) (in BIRR)



Source: Solidaridad (2018), From subsistence to professional dairy business: Feasibility study for climate-smart livelihoods through improved livestock systems in Oromia, Ethiopia



## FARM AGGREGATION MODELS

A key challenge is to collect milk efficiently from small-scale and medium-sized farmers. The way this aggregation is organized highly influences the transaction costs and ability to manage milk quality. Different mutually reinforcing models could be promoted to achieve efficiency:

- **Collective milk collection or milking centres:** village-based centres, also called dairy hubs, organize milk collection and cooling. They are critical to manage the quality of milk from small-scale farmers. Dairy hubs can also facilitate the provision of inputs and other services to small-scale farmers. Dairy hubs can be fixed or mobile and privately-owned (e.g. an individual, or dairy processor), collectively-owned (e.g. cooperative or Trust) or publicly-owned (e.g. ministry of livestock).
- **Contract farming and outgrower schemes:** Medium and large-scale farms or dairy processors can engage in a longer-term procurement contracts with neighbouring small-scale farmers. This approach is often combined with the provision of basic services to ensure productivity and quality. Contract farming could for example support the business case of a medium-sized farmer to invest in milking and cooling equipment. In outgrower schemes, the contracting partner also facilitates or invests in the upgrading of existing farms or establishment of new farms. New farms could be clustered at one location. It generally involves a fully integrated service and milk off-take package where farmers will pay for the ownership of their farms, equipment and possibly land through deductions of their milk payment.

Farmer organizations can also support the aggregation of milk, whether through collective milking centres or contracting arrangements with their members.

## CASE BOX 2: AKSHAYAKALPA - OUTGROWER MODEL IN INDIA

Akshayakalpa Farm and Food LTD is an Indian company manufacturing and marketing organic milk products. It operates an outgrower model with local family farms for milk production. Akshayakalpa supports farmers in setting up medium-sized organic dairy farms. The company helps farmers to get loans from banks to establish farms and buy cows. The farms have a standardized design and are made for twenty-five cows. The design includes airy, steel-roofed sheds, with rubber mats on cemented floor, automatic milking systems, milk analysis equipment, a biogas plant, a biodigester, fodder choppers, silage pit and a chilling unit. The model is based upon years of research on the farm size needed to become viable for profitability and quality management. Once farms are operational, Akshayakalpa provides continuous support and oversight on the farming operations.<sup>1</sup> The use of information technology allows them to control cow movement, animal health, milk volumes and quality.<sup>2</sup> Farmers repay their loan directly to the bank, using the contract with Akshayakalpa as collateral. The current model includes 150 farms and the ambition is to grow to 500 farms in the near future. The success of the model made dozens of young people who had left their villages to return and participate in the venture.<sup>3</sup>



Sources:

- 1 <https://en.wikipedia.org/wiki/Akshayakalpa>
- 2 Times of India (2011)
- 3 The Hindu (2017)

## **FACTORS AFFECTING THE BUSINESS CASE OF PRODUCTION MODELS**

Various influencing factors or drivers determine the feasibility and business case of production models in a particular context. Some of them are difficult to influence, such as the availability of land or changes in climate, both important factors influencing fodder and milk production. For example, in an area with a limited amount of land available for fodder production, introducing medium-sized production models is a challenge. Other influencing factors could be addressed in the other components of the sector transformation approach:

- **Markets:** a demand for quality milk supporting the business case to invest in and finance more professional and sustainable production models
- **Services:** the accessibility to breed, feed, fodder, medical, veterinary, technology, credit and other services
- **Governance:** land governance and land tenure, market promotion and market regulation

The experience shows that the existing drivers vary per country. In many middle-income countries there is an increasing demand for dairy products while finance and other services are generally available. These form good conditions to promote a more evolutionary transition path of small-scale farmers becoming increasingly professional. It can also drive a somewhat autonomous development of a more commercial sector with medium and large-scale farms. The challenge in such context is to promote inclusiveness, sustainability and resiliency. In low-income countries, the demand pull may be weaker and finance and other services are often lacking. Such context requires investments in new production and value chain models with parallel efforts to improve the enabling environment. For example, dairy hubs and outgrower schemes will need partnerships with dairy companies to secure the uptake of milk and develop the trust among farmers and financial institutions to invest. The absence of such private partnerships will drastically weaken the business case of investing in more professional, collective production and milk collection centres.







## II. HIGH QUALITY AND SEGMENTED SERVICES

The second component concerns the provision of services needed to develop the professional and climate-smart production models. The accessibility and quality of services is a key driver for sector transformation.

### A SEGMENTED NEED FOR SERVICES

Farmers need many services to become more professional and sustainable. They need capacity building, information, inputs (breed, water, fodder, feed, salt), animal health services (medicines, veterinary services, artificial insemination, vaccination), technology and finance. Services can either be offered in a bundled way or, at least, be designed to complement other services. Some services are a must for farmers, for example vaccinations. An option is to organize vaccinations top-down and regularly vaccinate all cows in a dairy processor's supply base or jurisdiction. For other services,

needs are more differentiated. Hence, services need to be tailored to a farmer's need. For example, more professional farmers need more sophisticated equipment and infrastructure such as cowsheds, milking machines, transport, cooling, laboratory and processing facilities. The importance of information technology for farm management and planning also increases with the level of professionalism. The segmentation of farmers and provision of progressively complex services could promote continuous improvement.

The availability of financial services is critical to any farmer in order to access services. Finance is needed in the short-term (e.g. for feed or veterinary services), mid-term (e.g. for heifers) and long-term (e.g. for cowsheds and milking machines). Finance is also critical for service providers that need to invest in their business.

### CASE BOX 3: VARIOUS WAYS TO ORGANIZE MORE COMMERCIAL FODDER PRODUCTION

Fodder is a crucial input during certain times of the year in many geographies. Fodder is the most important component in the dairy cost price. Ensuring fodder is readily available at a lower price during the dry season can be a significant boost to move to more professional dairy farming systems. Various ways exist to organize fodder production. In Tanzania, labour shortage in the production season is a constraint. Thus, a new venture has started to produce fodder on a commercial

scale with a high degree of mechanization (starting with 25 ha and intended expanding to 100 ha). Links are established between these farms and the dairy hubs (see Case box 6) and dairy farm settlements (see Case box 8). In Bangladesh, fodder production is fostered by promoting commercial small and medium-scale production models (see Case box 5).

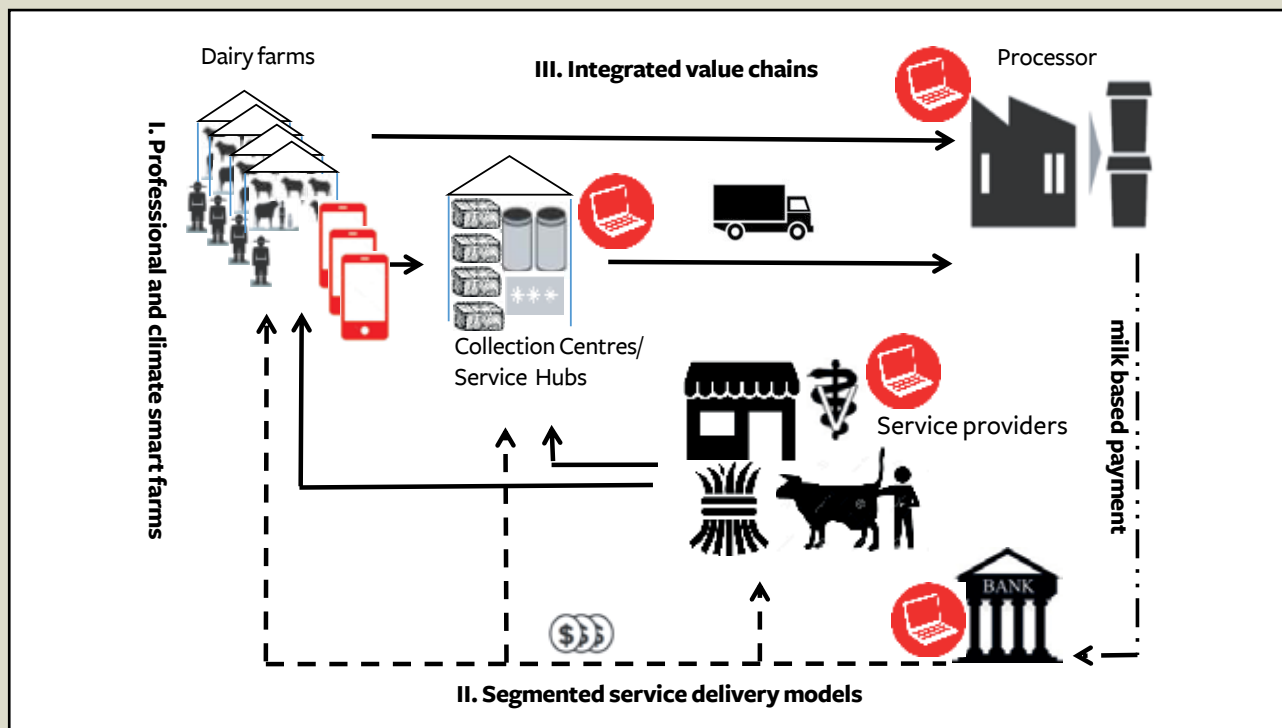
Source: Solidaridad (2019)



## CASE BOX 4: THE INCREASING ROLE OF ICT

Akshayakalpa in India (see Case box 2) uses ICT solutions to control cow movement, animal health, milk volumes and quality. The promotion of mobile apps also supports capacity building. For example, it can help to record and abstract data on cow calendar, medicine registration, treatment protocols, herd status and farm comparison. It supports farmers directly and determines what services

farmers require. ICT can also provide farmers with weather and market information as well as data related to important events. For the processor, the system allows to manage supply in terms of volumes, quality and planning and avoid, for example, side-selling. Although not yet part of this project, ICT can also facilitate traceability and stock management within and beyond individual supply chains.



Source: Solidaridad (2019)

## VIABLE SERVICE DELIVERY MODELS

The provision of services requires cost-efficient, economically-viable and scalable service delivery models. In many countries, there is still a need to establish or strengthen the service delivery models. Services can be provided through the value chain, producer organizations, specialized service providers and the public sector.

Ways to distribute services to small and medium-sized farmers include a mix of:

- **Lead farmers and local entrepreneurs:** selected farmers are incentivized to provide services for neighboring farmers. An option is to develop them into small and medium-scale enterprises (e.g. in fodder production, insemination and input distribution). This model offers opportunities to promote female entrepreneurship.

- **Dairy hubs or business centers:** farmers can access services at service centers, generally the same as the milk collection or milking centers. This model will be enhanced when the milk payment system goes directly through farmers' bank accounts.
- **Farmer organizations:** members receive services that are procured by the organization externally or are available in-house.
- **Outgrower and contract farming:** the provision of services is included in the contractual arrangements with farmers.

The quality of services is critical. By considering a farmer as a client and by monitoring their satisfaction, service providers can continuously refine their offer to improve their value.<sup>13</sup> For some services a kind of pre-competitive, quality control could be considered (e.g. certification).

<sup>13</sup> IDH (2017), Driving innovations in smallholder engagement: Insights in Service Delivery and Finance

### **CASE BOX 5: THE DEVELOPMENT OF SMALL AND MEDIUM-SIZED SERVICE PROVIDERS IN BANGLADESH**

In Bangladesh, Solidaridad created community livestock service providers. Selected persons were trained in providing veterinary services, such as vaccination and artificial insemination, and becoming an input supplier or cool chain facilitator. These people serve dairy farmers on a commercial basis. Solidaridad also introduced fodder villages. It supported community members to start fodder production as a means of livelihood. This has increased the availability of fodder in the project area with a good impact on productivity and a reduction of reproductive failure of the livestock. The development of SME-driven service provision requires a combination of capacity building, market development, and finance.

Solidaridad is currently working on a business accelerator to ensure agribusinesses in Bangladesh can take out loans for the expansion of their business such as making dairy

products, selling seeds or taking care of milk transport. The 100 best performing entrepreneurs will develop a business model for their business, write well-developed business plans and learn how to pitch them. The top 20 performers that have highly scalable business models will be selected to participate in the accelerator. These entrepreneurs will receive a 15,000 investment and an intensive 6-month training programme. Afterwards they will be linked to impact investors. The accelerator is not just a catalyst for entrepreneurial financing. It acts as a commercial entity and will take the form of a social enterprise. Income is derived from membership contributions that the participating entrepreneurs pay. In exchange, they receive state-of-the-art training, complemented by an internationally-recognized certificate upon successful completion.

Source: Solidaridad (2019)

### **CASE BOX 6: DAIRY SERVICE HUBS IN TANZANIA**

In Tanzania, various milk collections centres (MCCs) exist for collecting and cooling milk from small-scale farmers. A new project transforms these MCCs into service centres, or Dairy Hubs, providing services including:

- livestock services (veterinary, artificial insemination)
- supply of fodder, feed, semen and medicine
- credit facilities with pay back through milk payment and potentially insurances

Tanga Fresh, the biggest dairy processor in Tanzania, is supporting the establishment of the dairy hubs. The project aims to turn the Dairy Hubs into a commercially-viable, one-stop shops for farmers.

Source: Solidaridad (2019)



## CASE BOX 7: HOW DAIRY PROCESSORS CAN FACILITATE FARM INVESTMENT

- The earlier examples of the Akshayakalpa outgrower model (see Case box 2) and Tanzanian Dairy Farm Settlements (see Case box 8) include the financing of establishing farms.
- The Colombian cooperative and dairy processor Alqueria, in collaboration with the World Bank's Biocarbon Fund's Initiative for Sustainable Forest Landscape programme, finances dairy farmers in the Orinoquiá region to adopt climate-smart dairy production practices that reduces GHG emissions by 25%, ensuring Alqueria's milk is produced in verifiable deforestation-free environments.<sup>1</sup>
- Nestlé collaborates with Provincial authorities in China to increase the levels of training and technical assistance already provided to local farmers. The company has created an investment fund with the government that allowed it to distribute 1,000 free milking machines to farmers to ensure that no farmers in the region have to continue milking by hand.<sup>2</sup>

1 Source: <http://www.worldbank.org/en/topic/food-quality-and-food-safety/brief/moving-towards-sustainability-the-livestock-sector-and-the-world-bank>

2 Source: <https://www.dairyreporter.com/Article/2012/01/11/Nestle-accelerates-Chinese-dairy-development>

## THE ROLE OF DAIRY PROCESSORS AND IMPACT INVESTORS

Dairy processors can play an important role in facilitating access to services. They can establish tri-partite partnerships between producers, service providers and themselves. In such a partnership, which are generally linked to contracting or 'an outgrower scheme', services are provided to farmers, are paid by the dairy processors. The price of the services is deducted from the milk price received by the farmer. The impact of such models can even be larger when it not only facilitates short-term finance but also mid- and long-term investments. This requires the availability of tailored financial products in which long-term milk contracts could be considered as collateral. Dairy processors could also invest in service provision by themselves. This approach can generate business benefits in terms of increased volumes, higher milk quality and more loyal suppliers.

The introduction of services at scale may also require new financial models that allow for balancing the financial sustainability of delivery models with impact at farm level. Blended finance and impact investment may need to be part of such models. As the transition towards more efficient production models has the potential to generate considerable reductions in GHG emissions, opportunities to leverage climate finance should be explored.





# III. INTEGRATED VALUE CHAINS

The third component is about the creation of more integrated value chains.

## INTEGRATED VALUE CHAINS AS A CONDITION FOR FARM-LEVEL INVESTMENT

Dairy processors play a pivotal role in driving the transformation of dairy sectors from a market-based approach. The creation of more transparent and stable trading relationships between dairy processors and milk farmers is a key to success in many contexts. Secured market access is an important incentive for farmers to invest in productivity, quality and sustainability. It can also facilitate the access to services, including short and long-term finance (10-15 years).

Dairy processors have different options to build more integrated value chains:

- Direct procurement: dairy processors buy milk directly from individual farmers, dairy hubs or cooperatives.
- Contracting and outgrower schemes: as explained in the previous sections, this consists of establishing longer-term contractual relationships between processors and individual farmers or farmer groups. These relationships can include various options of service delivery as well as incentives for quality and sustainability.

Alternatively, farmer organizations can also invest in forward integration. For example, dairy cooperatives could invest in dairy processing facilities, product development, marketing and distribution.

## RESPONSIBLE PROCUREMENT PRACTICES

The quality of trading relationships between value chain actors and producers can have important implications for the capabilities and incentives of producers to invest in productivity, quality and sustainability. Quality trading practices include the respect of basic fairness principles regarding transparency, price-setting, quality control, payment and other contractual terms. Good practices include longer-term purchasing agreements, pre-finance and incentives for quality and sustainability. Unfair trading practices should be avoided, such as cheating in weighing and quality control as well as long payment terms and rebates.

### CASE BOX 8: TANZANIA - DAIRY FARM SETTLEMENTS – OUTGROWER MODEL

Dairy 2025, a dairy programme with dairy processor Tanga Fresh, is piloting a new and innovative approach to increase the sourcing capacity. It promotes new dairy farm settlements that consist of a farm franchise model with (new) young farmers establishing medium-scale dairy farms (>13 milking cows) on plots of 10 hectares, which have currently low productivity. The new farmers will become owners of the equipment within 10 years and preferably also of the land in the same timeframe. The model includes a fully integrated service model. Payment for services, equipment,

cows and preferably also the land will be done by milk payment. The service provider in this model is a large-scale farm, Mruazi Heifer Breeding Unit. The expectation is that the combination of a viable farm scale, Tanga Fresh as trusted partner for uptake of the milk and facilitator of the payment structure, a full-service approach, and infrastructure in close vicinity will propel new and current farmers to start with medium scale commercial farming.

Source: Solidaridad (2018)

## THE BUSINESS CASE FOR BACKWARD INTEGRATION

The business case to invest in more direct and stable milk procurement is not always clear, but it can result in important benefits. In various contexts, the benefits for dairy processors to invest in direct and stable trading relationships with farmers can be limited, at least from a short-term perspective. Well-known issues include the low level of professionalism of farmers and farmer organizations, high transaction costs, the limited availability of quality milk, and the investments needed to improve quality and scale volumes. In certain countries, importing dairy ingredients is

cheaper than buying them locally. Nonetheless, from a medium to longer-term perspective, investing in more integrated value chains can have two important benefits:

- Increased and stable access to high quality milk at lower costs (crucial for the fresh dairy market)
- Increased market reputation and license to operate within a country

These two business benefits can be significant, particularly in an increasingly competitive environment.

### CASE BOX 9: NESTLÉ – CONTRACT FARMING

Nestlé owns processing facilities in various countries. To support the direct sourcing of high quality fresh milk, it operates a partnership model with local dairy farmers. The Milk Districts model is implemented in 31 countries and combines long-term buying commitments, service provision and infrastructure development. For example, in Sri Lanka, Nestlé provides approximately 20,000 farmers with regular training, technical and microfinancing assistance, mobile veterinary clinics, milk churns and other resources. It also invests in establishing essential infrastructure for dairy farmers, such as milk collection points. Globally, Nestlé

works with more than 300,000 dairy farmers under this model. The model has been proven to provide a good basis for introducing innovations such as new technologies, incremental price incentives for loyal farmers and solutions to tackle environmental, social and animal welfare issues in production.

Sources: Nestlé's website & <http://www.ft.lk/agriculture/Nestle%20-%20successful-milk-district-model-helps-enhance-lives-of-thousands-of-smallholder-milk-farmers/31-658448>





# IV. EFFECTIVE GOVERNANCE

The transformation of a dairy sector cannot be driven by individual companies alone. Their potential impact to transform whole sectors may be limited and result only in some ‘islands of success’. They may also struggle with the systemic issues that undermine their investments. Examples include price volatility, unaffordable—and therefore absent—services for farmers, and a lack of transparency.<sup>14</sup> To reach sustainability at scale, value chains need to be part of high performing and resilient sectors. The development of a sector as a whole requires a certain degree of governance. The governance refers to the collection of rules, stakeholder involvement and processes to manage for shared interests. Sector governance is broader than government, covering non-state individuals and institutions, including the private sector. There are three main functions in governance: regulation, investment and coordination.

## POLICY AND REGULATION

The importance of a sound public policy and regulatory environment cannot be understated when promoting a competitive and sustainable dairy sector. It creates a level playing field and highly influences the direction that a sector is able to take. Some of the key topics that policy and regulation can cover are:

- Land governance: land tenure
- Animal health management: feed quality control, animal health standards, cow disease control, cow registration systems

- Dairy quality management: quality standards and control mechanisms
- Social and environmental performance: labour standards, regulation on soil, water, biodiversity and climate
- Market promotion: processing industry promotion, school feeding programmes
- Market protection: trade policy, price management, national sourcing targets

## INVESTMENT

The development of dairy sectors requires pre-competitive investments that complement investments by individual companies. Hence it is important to strengthen the ability to generate revenues at sector-level (e.g. by taxes or levies) and make strategic re-investments into the sector. These mechanisms require a high level of transparency and accountability. The key areas for investments can be found in all four sector transformation components and include, for example:

- Research and development: new breed, improved inputs
- Quality management: feed quality and milk quality control
- Service provision: vaccination programmes, veterinary services, technical extension
- Investment and guarantee funds: investment facilities for farming and processing

<sup>14</sup> Aid environment, IIED and Sustainable Food Lab (2017), An overview of sector governance. Looking beyond the value chain to build high performing and resilient agriculture sectors

## CASE BOX 10: IMPORT CONTROL MEASURES

Emerging dairy sectors may struggle to compete with cheap imports where these imported products have a high-quality standard. The cost of production of dairy ingredients can be considerably higher than from countries with more developed sectors. In order to give the sector time to develop, one could opt to protect its market from cheap imports (e.g. through import tariffs or quota). This protection can also provide incentives for food processing companies to invest in local dairy development programmes rather than importing their ingredients. In India, market protection measures, including import tariffs, quota and bans, have supported the development of the dairy sector. In Kenya, import tariffs also contribute to the development of dairy production in line with the growth in domestic demand. In Kenya, import tariffs on milk powder are used in a flexible way and reduced or removed in periods when domestic production falls short. Market protection can also have adverse consequences in

terms of reduced incentives to achieve cost-price reductions, possibly resulting in higher consumer prices. To mitigate this risk, complementary policies and investments are needed to promote more efficient farming systems, possibly combined with incremental trade liberalization.

Where market protection is not allowed or difficult to implement, alternative measures to promote national dairy production can be:

- Local sourcing thresholds; companies need to source x% of their milk from domestic producers (and/or smallholder producers) with transparency to the society or government
- Restrictions to recombining of fresh dairy; companies need to use x% of domestic milk when a dairy product is sold as ‘fresh dairy product’.

## COORDINATION

Sector transformation requires coordination and alignment of key stakeholders across the four components. Dialogue and governance need to have a multi-stakeholder nature. This can be organized both within or at arm's length of the government (e.g. sector platforms or more formal governing bodies). The key for successful coordination is the development of a shared vision of the future dairy sector.

This vision should be the basis for defining strategic priorities per component. The multi-stakeholder governance mechanism can also be functional in developing common standards, guidelines and tools, as well as in policy influencing. Effective coordination requires sector-wide monitoring of progress towards the fulfilment of the vision and to inform evidence-based learning.

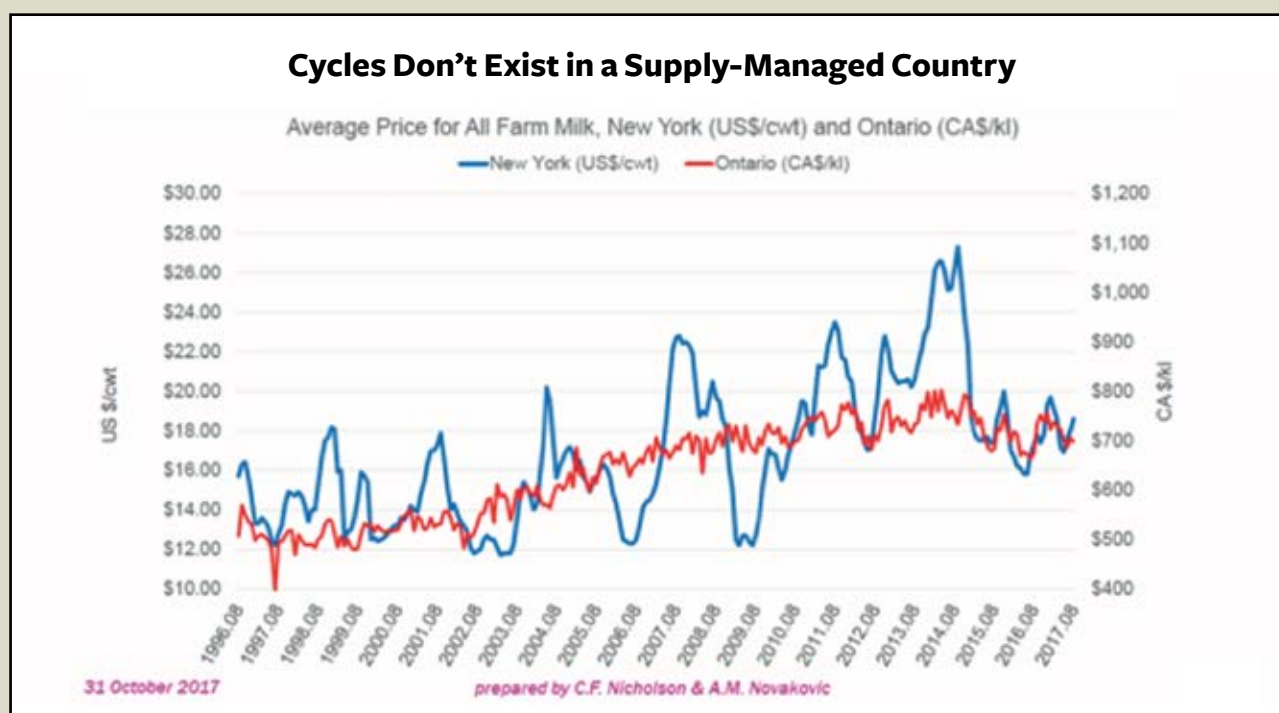
### CASE BOX 11: MARKET MANAGEMENT IN CANADA

Canada's dairy sector is one of the few agricultural sectors that is self-sufficient – providing income security for farmers and requiring no government subsidy. Since the 1965 Milk Act, the dairy market in Canada has been a managed-market system built on three pillars: 1) producer pricing, 2) production discipline, and 3) import control. The Act set up two farmer-managed marketing boards in two regional milk pools. All of the milk produced is sold through the marketing boards. Production quotas are set in each state and distributed to farmers with an annual allocation for new entrants. Processors request volumes from the marketing board and end prices are set by retailers.

The Canadian Dairy Commission was established to oversee the system and meet two objectives: 1) provide efficient

producers with the opportunity to obtain a fair return for their labour and investment, and 2) provide consumers with an adequate supply of high-quality dairy products. Farm-gate prices are updated each year based equally on the change in cost of production and on the Consumer Price Index.

This dairy system has greatly reduced volatility and delivered positive net returns for farmers each year. Today, Canadian dairy farmers receive USD \$26 to \$27/hundred weight, which can support a living income for a family farm. In contrast, US dairy farmers in the New England region receive prices of \$16 to \$17/hundred weight, which is below an average cost of production of \$20 to \$21/hundred weight. The chart below shows how the price stability in Canada compares to volatile prices in the US.



Sources: Aidenvironment & Sustainable Food Lab (2018), Pricing mechanisms in the cocoa sector: options to reduce price volatility and promote farmer value capture.



# TOWARDS MORE COMPETITIVE AND SUSTAINABLE DAIRY SECTORS

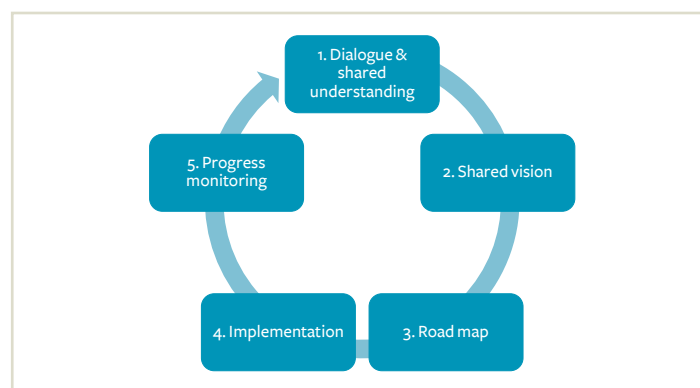
## FIVE STEPS TO KICK-START A SECTOR TRANSFORMATION PROCESS

A holistic and coordinated process of sector transformation requires facilitation and management. A starting point for such a process is found in the governance component. The creation of a space for sector dialogue between key stakeholders is an important first step. Such dialogue should result in a shared understanding of the current performance of the sector. A proper diagnostic of the characteristics and performance of the four components contributes to this understanding. Once this diagnostic is validated, the next step is to develop a vision for the sector. This vision could be defined over a 15 to 20-year period for the desired overall sector performance and across the four components. The vision should encompass ambitions on both competitiveness and sustainability. Based upon the vision, strategic priorities can be defined that translate into a sector strategy or roadmap and action plans. In developing a vision and roadmap, it is important to:

- prioritize according to the country context
- take the future vision as point of departure, not today's problems
- adopt systems thinking and define complementary strategies (i.e. aim for a sea of change rather than some islands of success)
- combine longer-term change processes with shorter-term projects to build commitment, confidence and collaboration

A good starting point for such a process is initiating (pilot) projects with dairy companies and/or investors, based on the shared vision. Once implementation has started, continued coordination and monitoring are needed to ensure alignment and synergies between initiatives and to promote learning. This could be done by a multi-stakeholder-governed platform or body. To assess whether the sector transformation strategy is generating the desired outcomes or needs re-adjustment, it is recommended to monitor a few

**Figure 5:** Five steps to kick-start a sector transformation process



priority indicators (e.g. linked to the performance indicators on competitiveness and sustainability). The monitoring results can be used to adapt the strategy.

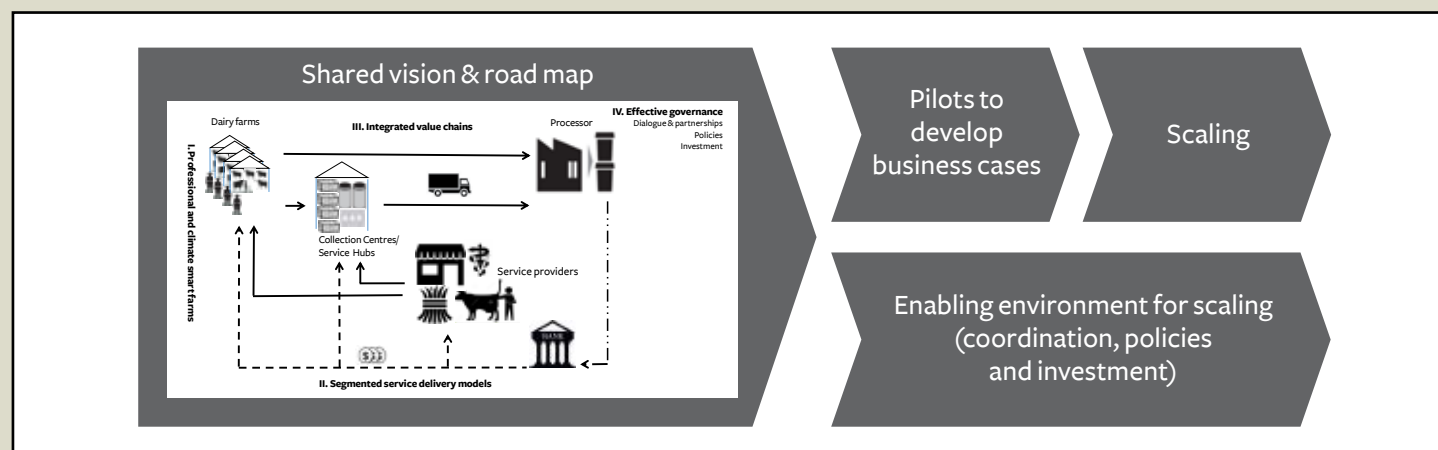
## WORKING ON NEW BUSINESS MODELS AND THE ENABLING ENVIRONMENT

Sector transformation requires new business models and an enabling environment for scaling. In support of realizing the vision, it is key to design and test viable production, service delivery and value chain models, which requires clear business cases and investment propositions. Forging partnerships and co-creation between domestic and foreign actors (e.g. private, public, knowledge and financial institutes) can facilitate investments in:

- Input (feed, breed, technology)
- Output (processing, supply, commercialization)
- Services (knowledge, technology, capacity)
- Finance (loans, insurance, impact investments)

In addition, an enabling environment needs to be created that allows for scaling new models. This includes the introduction of the appropriate policies and coordination and investment mechanisms.

**Figure 6:** Piloting scalable models while building the enabling environment for scaling





## A CALL TO ACTION

The global dairy sector is growing, particularly in low- and medium-income countries. This growth creates both risks and opportunities in terms of inclusive economic development, sustainability and climate change. The expansion of current inefficient production and value chain systems in these countries will further exacerbate poverty, cost-inefficiency, poor milk quality, land use and climate change. Meeting future demand with increased production from industrial countries may respond to some of these challenges. It will, however, neither provide an answer to the increased demand for fresh milk, nor enable poverty reduction. Neither will it enable the reduction of the climate impact of current inefficient production systems.

According to Solidaridad, the way forward is to professionalize national dairy sectors of low- and medium-income countries. The transformation towards more competitive, inclusive and sustainable national dairy sectors requires a holistic and coordinated context-specific strategy of which its core building blocks are:

- I. Professional and climate-smart dairy production models: the promotion of professional, productive and efficient farming models
- II. Quality and segmented service provision: the introduction of scalable service delivery models of quality services for a segmented production base
- III. Integrated value chains: the establishment of direct and stable relationships between farmers and dairy processors based upon a market pull for quality products
- IV. Effective governance: coordination and alignment of sector stakeholders, conducive regulation and sector-wide investments to improve sector-wide performance

Engaging on a pathway of sector transformation requires sound strategies, alignment and above all commitment from a range of actors. Lifting sectors to a higher level of professionalism requires

innovation trajectories to develop the viable business cases and investment propositions for production, service delivery and value chain models. Commitment from the dairy industry to invest in these models is crucial. Dairy processors, in particular, can create the conditions in which farmers, service providers and financial institutions are willing to invest in more professional models. The business case to make the initial investments in innovation trajectories may however be weak in underdeveloped markets. Hence the importance of partnerships with the public sector, impact investors, knowledge institutes and development partners. These actors can co-create and co-invest with the industry to share risks and ensure the availability of the required knowledge, technology and funding. Partnerships should be based upon long-term commitments to create sufficient space for rigorous implementation and learning.

Meanwhile, conditions need to be created that facilitate further scaling of the successful models. Conditions include enabling policies, coordination and investment mechanisms. Governments, possibly with support from bilateral or multi-lateral donors, have a leading role in creating the enabling conditions. They should pursue a long-term perspective, based upon a shared sector vision, to create the systemic changes that allow for sector-wide transformation. It is critical that governments and donors do this in dialogue with all sector stakeholders to ensure alignment and synergies in investments.

Solidaridad invites stakeholders to collaborate with them in transforming dairy sectors in low- and medium-income countries. It can contribute as programme manager, facilitator of the multi-stakeholder process, knowledge partner, pilot implementer, business developer and matchmaker with impact investors for further upscaling.







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