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SUSTAINABLE LIVESTOCK AGRICULTURE

as a key to economic
prosperity in rural areas
of Armenia

Case study



This publication aims to summarize the achievements of the Livestock Development in Armenia project (2006-2021), implemented by the Strategic Development Agency (SDA). The first four phases of the project were funded by the Swiss Agency for Development and Cooperation (SDC), while the fifth phase was co-funded by SDC and the Austrian Development Agency (ADA).

In 2006, the Project started to support farmers in 13 villages of the Syunik region to improve their access to markets and veterinary services, learn good animal care practices, and enhance the quality of their milk production.

Later in the subsequent phases, the Project enlarged its geography and scope of interventions by engaging in 220 villages in 6 regions covering Southern and Northern Armenia. During the fourth and fifth phases, the stakeholders and partners of the Project continued to receive support for the development of dairy and meat value chains. It focused on providing technical assistance to farmers, the development of farm support services, access to markets and finance, light infrastructure provision, and local governance aspects relevant to the development of the livestock sector. The Project ended in 2021 after systematically adapting and addressing the challenges raised by the COVID-19 pandemic and the 2020 war in Nagorno-Karabakh.



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TRADITIONAL TRADE WITH A LOT OF IMPACT ON MODERN SOCIETY

Livestock farming is a traditional business, but even in the 21st century, it would be wrong to consider it outdated. This sector has a far-reaching impact on local communities and the country as a whole, both in the public and private sectors, with a solid potential to address unemployment and labor emigration issues and improve living standards in the regions.

Through multiple implementation phases, the Livestock Development in Armenia project seeks to address such issues through a systemic approach of pioneering efficient livestock practices, initially in southern Armenia and then expanding to the north. Closely linked to other specific industries and services, livestock production can contribute to their development with minimal environmental impact when effective methodologies, modern technologies, and appropriate equipment are placed in the hands of skilled and knowledgeable farmers



Thanks to the Project, smallholder farmers, milk and meat processors, cattle buyers, providers of farm support services, wholesalers, other stakeholders in the milk and meat value chains, and communities in the Project locations have experienced

tangible successes, including but not limited to better access to markets, stable links to collecting and processing businesses, increased productivity, investments and, ultimately, profit.

Farms productivity improved due to the development of farm support services (e.g., veterinary and animal artificial insemination, extension services) by veterinaries, agro-input suppliers, mechanization specialists, efficient animal breeding and fodder production practices, as well as improved capacities of farmers in animal husbandry. In addition to the increased productivity, the enhanced milk collection and cattle trade infrastructure and better market linkages between farmers and processors allowed absorbing additional milk and meat produced by smallholder farmers in the target area. Notably, the Project also helped establish the Syunik Animal Market, which later transformed into a social enterprise called the Ranch.

The Project has also supported local self-governance bodies to enhance their capacity to address the needs of farmers in their communities, such as the access and use of community pasture lands and relevant infrastructure development, availability of support services and access to information, improvement of municipal services, public animal health services, data management and documentation related to livestock.

KEY ACHIEVEMENTS: GENERAL*

- ▶ Over **150,000** residents of rural settlements have improved access to agricultural markets and farm support services
- ▶ **168** farm support service providers such as veterinary, cattle artificial insemination, and supply of agro-inputs serve farmers in **220** villages
- ▶ Around **70%** of male and female farmers used farm support services to ensure animal health and implement breeding programs, thus increasing farm productivity, quality, and output of milk and meat
- ▶ **74** businesses invested in milk collection, processing, marketing, and cattle trade infrastructure
- ▶ Dairy cattle productivity increased by **25%**, beef cattle productivity increased by **32%**
- ▶ **46,450** farmers (44% were female) earned more income from milk and meat. Cash income per smallholder farmers increased by **60%**
- ▶ **396** off-farm jobs (**33%** for female) were created in milk and meat value chains in addition to **1,311** on-farm jobs or self-employment
- ▶ Farmers and private intermediary businesses in meat and dairy value chains invested AMD 2.2 billion (CHF 5.1 million), with the facilitation of the project
- ▶ The volume of milk traded by farmers increased by 86% (comprising **201,000+** tons in **2020**)
- ▶ The volume of meat trade by farmers increased by **60%** (containing **11,700+** tons in **2020**)
- ▶ Additional net income received by farmers from milk and meat in **2020** included more than **13** billion AMD.

LIVESTOCK REARING IN ARMENIA'S RURAL AREAS AND ITS SOCIAL SIGNIFICANCE

Agriculture is the main occupation and source of income for most rural residents of Armenia, constituting roughly one-third of the country's population. Livestock farming, in particular, has been the primary income source for centuries in more elevated areas, where flat land is scarce and climatic conditions are less favorable for farming. Meat and milk processing have traditionally given rise to a number of trades, the importance of which is hard to overestimate.

However, with global warming and population growth, the modern age requires more efficient animal husbandry to adapt to changing conditions. The Project's main achievement is not simply the growth of meat and milk production and improvements in the value chains linked to them but, more importantly, the development of knowledge and skills in livestock farming.

Improved livestock breeding and rearing methods can have profound social and economic effects, especially in regions with lower living standards than the capital, Yerevan, or other villages that can quickly grow and sell crops. It also has untapped potential to revive disadvantaged communities and create new jobs locally.

* All presented key achievements are related to Phase 4 (2014-2021) and Phase 5 (2017-2021) covering respectively the South and North of Armenia.

GEOGRAPHY, PROJECT PARTNERS, AND BENEFICIARIES

The geography of the Project is very impressive, including a significant and strategically important part of the territory of Armenia in its northern, eastern, and southern regions along the borders. In fact, it included a good number of rural communities of the Syunik and Vayots Dzor marzes and Gegharkunik, Tavush, Lori, and Shirak (in total 220 settlements), thus ensuring the Project's presence in the majority of Armenian administrative districts.

The beneficiaries and partners of the Project were on multiple levels and in both public and private sectors, such as farms, municipalities, processors, service providers, etc. In particular, the Project had five phases and gradually increased its support from 3000 farmers around

Goris during the 1st phase to around 160,000 farmers in total during the final 4th and 5th phases, which ran simultaneously in southern and northern Armenia. Meanwhile, thanks to the Project, the income of 46,450 livestock farmers (44% female) has increased by 60%, engaging 17% more end-beneficiaries than initially targeted.

The Project's scope not only gradually increased in terms of geography and number of beneficiaries but also in the number of supportive services, systems change, level of impact, and even crisis response, given the situations around the COVID-19 pandemic and the 2020 war in Nagorno-Karabakh.



LIVESTOCK HEALTH IS THE FARMERS' WEALTH

One of the components of the Project was dedicated to improving veterinary medicine and cattle artificial insemination services in target regions through investment and capacity building of existing or new service providers to increase service efficiency, quality, and sustainability. Establishing a network of veterinary services and artificial insemination points brought about significant changes in the quality of cattle breeding and rearing in those areas.

Thanks to the Project, local professionals were capacitated to establish 102 veterinary and 52 artificial insemination points from 2014 to 2021 in the Syunik, Vayots Dzor, Gegharkunik, Tavush, Lori, and Shirak marzes. These private veterinary service points provided services to over 15,200 households involved in animal breeding in 217 rural settlements in 2020. Over 50,000 private cattle insemination services were provided in the Project's lifecycle.

The quality of the services offered by such points received high satisfaction ratings from the farmers (92%), who noted the importance of veterinary services in preventing and treating animal diseases and contributing to the growth and improvement of their livestock.

Furthermore, during the implementation of the Project, the veterinary and artificial insemination service providers continued receiving support to optimize their investments and costs gradually. As a result, the established veterinary and artificial insemination points started to profit relatively quickly, making way for reinvesting profits into providing additional demand-driven paid veterinary services. The veterinary points also became self-financing over time, reinvesting profits into necessary instruments and medication.

The farmers themselves emphasized the importance of preventive measures and regular visits to the veterinarian, which

was the direct result of improved knowledge via the training and consultation sessions provided by the Project.

In 2020, about 70 percent of the targeted farmers involved in animal husbandry were served and/or consulted by a veterinarian on disease prevention, animal care, and livestock rearing practices, thanks to the 102 veterinary points operating in the target areas. The Project also improved interactions between local veterinarians and veterinary medication and instrument-supplying companies, expanding their distribution geography, supply volumes, and the number of customers. The most impressive shift was the transformation in farmers' mentality and stance towards paid veterinary services, with its positive impact becoming universally accepted among them.

Interbreeding cattle due to the overuse of a small number of bulls was an increasing problem in Armenia, resulting in a degenerating cattle stock. To address this issue, the Project capacitated local professionals to provide cattle artificial insemination services, an internationally accepted practice of improving the genetics and, therefore, the health and productivity of cattle. It is important for the farms' performance since the quantity and quality of milk and meat production increases by respectively resulting to increased income. Artificial insemination also gives farmers more control over the timing of insemination and therefore calving, enabling farmers to avoid calving during peak dairy production times or when milk prices are highest. For example, in South Armenia, more than half of the households engaged in animal husbandry applied to artificial insemination points established by the Project, resulting in over 30% of the local cows being inseminated artificially in the target area in 2020.

In addition, to improve farms' herds from year to year, having a good replacement policy (replacing old/non-productive animals with better/younger ones) is essential.

This was not a common practice in the target areas of the Project, leading to low productivity and additional costs due to cattle poor fertility, calving issues, age, lameness, poor milking, udder problems, calf quality, and cow docility. The Project continued to support improving cattle pedigree characteristics and promoting replacement practices.

The livestock replacement scheme was first successfully tested during earlier phases of the Project. Interventions in this direction also improved farmers' understanding of cattle valuation by differentiating between "bad/with poor and good cows, which can be twice expensive, reaching over AMD 1 million (CHF 2,300) per cow.

One of its advantages was the immediate effects on animal productivity while proving the commercial benefits of improved cattle genetics and stimulating demand for artificial insemination services.



CROSS-BORDER COOPERATION

To safeguard the strategic and long-term impact of the project, it was essential to facilitate private sector development and establish intensified cross-border economic relationships, including export opportunities of dairy products to neighboring Georgia.

As a result of the Project, Armenian and Georgian consumers benefited from products with increased availability, higher quality, and better prices, thanks to the intensified cross-border trade of meat and milk products.

Also, in the North Armenia, the Project linked the commercial wholesalers of veterinary and artificial insemination inputs directly to the network of village vets to ensure a sustainable and direct supply of a diverse range of materials.

New cross-border market linkages have been established between wholesalers and retailers in Georgia and Armenia. Thanks to the established partnerships and improved export capacities of private businesses, trade turnover (on farm inputs and dairy products) between Georgia and Armenia constituted over 1 million USD in 2021. Develop or improve their export strategies, which increased the export volume of cheese, sour cream, curd, Armenian yogurt (matzoun), and dairy ferments to Georgia.

MANAGING PASTURES FOR INCREASED QUANTITIES AND QUALITY OF MILK AND MEAT

With shifting climatic conditions and limited availability of land suitable for pasture, the latter's management has become and remains relevant for any farmer in Armenia. This needed lots of expertise and incentives to revise the established practices. Availability and access to natural pastures are vital for sustainable livestock development. The impact of risks on natural ecosystems, formed as a result of spontaneous livestock breeding, could increase drastically: the entire biodiversity, fodder production, and agricultural food production are endangered, which in its turn negatively affects the social-economic state of rural communities and, in a broad sense, the income of the population. Communal pastures are owned by the community and managed by municipal authorities.

The Project focus is strengthening the capacities of local authorities' in sustainable pasture management issues and leveraging investments in infrastructure. To improve the efficiency of Natural Resource Management and develop practical approaches to pasture management, the Project facilitated the development and introduction of

the institutional framework for implementing the Pasture Management system at the community level. In each rural settlement, working groups were formed, including farmers, community councils representatives, local authorities, and other stakeholders, which received extensive training on pasture management practices and developed 189 pasture management plans. The local authorities adopted and applied these pasture management plans, which led to improved practices on 235,000 ha of community pasture lands. All target rural settlements improved the mechanisms and procedures for inclusive access and sustainable use of communal pastures and maintained the pasture management system.

To ensure the long-term continuity and sustainability of the efforts on pasture management, SDA established the Coordination Platform for Sustainable Management of Armenia's Natural Fodder Areas: Pastures and Grasslands in 2017 (www.arot.am). The platform allows coordination and collaboration of different stakeholders interested in the topic via regular working discussions and advocacy.

KEY ACHIEVEMENTS: INFRASTRUCTURE*

Rural municipalities implemented 309 initiatives to improve pasture infrastructure and rehabilitate overgrazed or degraded pasture lands. Municipalities invested 31% of AMD 1.2 billion (CHF 2.8 million) total investment, ensuring that:



BOOSTING MEAT AND MILK PRODUCTION AND A LOT MORE

Livestock rearing aims to get and market better quality milk and meat in larger quantities. To increase the production and sales, the Project provided capacity building and technical assistance to milk processors and farmers in the target regions and promoted investments in milk collection and cattle trade infrastructures. Interventions focused on expanding the collection network of buyers and establishing milk collection and cooling points, particularly in the most remote villages with limited access to markets. In addition, technical assistance, such as marketing and management advice, was provided to dairy processors to raise the efficiency of milk supply and processing and increase internal consumption and export.

During the Project, 74 milk processors and milk collection points, including quite a number of new businesses, have improved their efficiency, increasing the volume of milk collected from female and male farmers. Private intermediary businesses invested around AMD 1.9 billion (CHF 4.4 million) in milk collection and processing infrastructure, namely

for establishing milk collection points, upgrading equipment at milk processing plants, providing food production requirements, marketing dairy products and cheese, etc.

Constant links between farmers and processing companies are necessary to make milk production sustainable and attractive for investments. Thus, milk market players usually consult farmers to get better quality milk.

Thanks to all this, the relations between farmer milk collection points and milk processors have also improved, and many have ventured to sign contracts with farmers for one year or even more extended periods.

Beef production in the target regions continued despite challenges, including the deterioration of the security situation in the affected areas since the 2020 war and subsequent escalations. In 2020, the volumes of beef supplied to the local market from Syunik and Vayots Dzor marzes more than doubled compared to 2014, thanks to increased cattle productivity and the Project interventions.

KEY ACHIEVEMENTS: REGIONS*

Syunik, Vayots Dzor

- ▶ Dairy cattle productivity increased by **23%**, and beef cattle productivity increased by **23%**
- ▶ Total volume of beef annually produced increased by **98%** (in **2020** compared to **2014**)
- ▶ Total volume of milk annually produced increased by **78%** (in **2020** compared to **2014**)

Gegharkunik, Lori, Tavush, Shirak

- ▶ Average milk yields from dairy cows have increased from **1,977** liters to **2,490** liters per cow per year (26% increase), and in one year, cattle average live weight increased from **148** kg to **208.5** kg (41% increase)
- ▶ **28,600** livestock farmers' income (45% female of the total number) from milk and meat value chains increased on average by **36%** (in **2020** compared to **2017**)

FOSTERING WOMEN'S PARTICIPATION

Livestock is a key sector for the economy of the most remote and mountainous rural areas. It has a vital role in rural livelihoods as a critical source of employment for women at the household level. Rural men and women play a significant role in livestock management, and an absolute requirement for the Project was to ensure that its activities in animal husbandry did nothing to undermine the role and economic involvement of women within the farm, family, and community.

The aim was to maximize the potential of the Project to benefit and include women economically.

Specific activities were initiated to encourage female farmers and improve their capacities to apply efficient animal husbandry practices.

Thanks to the Project, female farmers have improved skills and knowledge of animal husbandry and their confidence and ability to make informed decisions at the farm level.

The Project enhanced income-earning opportunities for both men and women: of the 46,450 farmers that earned more income from milk and meat during the Project, 44% were women. One-third of the 396 off-farm jobs created by the Project were for women.

Due to the increased trade of raw milk in the selected areas, the volume of cheese production in households decreased, and women, who were predominantly responsible for cheese processing, could dedicate time to more productive and valuable activities.

The Project also facilitated and motivated farmers to buy milking machines on credit, reducing the burden for women since milking is primarily a role that women take in traditional Armenian setup.



ANIMAL MARKET: THE RANCH

Access to markets is a critical component in the value chain associated with cattle breeding and meat and milk production. It can enable the more effective sale of cattle and meat and access to high-breed stock. This is why the Syunik Animal Market was established in southern Armenia in 2015 (renamed The Ranch LLC social enterprise in 2022).

The Ranch aims at systematizing animal trade in Syunik and Vayots Dzor and has had an impressive impact on the increase of meat production volumes in southern Armenia. The Ranch helps establish direct and stable relations between beef buyers, major cattle buyers, and farmers with its services and infrastructure.

It also serves as a platform for knowledge transformation and experience exchange. Within the Project framework, a range of intermediary cattle trade services were piloted and introduced to smallholder farmers and meat traders to organize animal trade better. Such intermediary services included, for instance, the provision of information on livestock available for sale in rural communities of Armenia, organization of regular sales of beef cattle to slaughterhouses and other institutional buyers, sale of milking cows and beef cattle on credit, sale of high-quality heifers and cows, etc.

Among other services, credit schemes for animal trade and agricultural equipment trade were available for farmers, which helped them increase the number of cattle with better breeds and equip their farms with fodder mills and milking machines without substantial and immediate investments. The farm equipment was sold on credit to make it affordable for small farmers, and embedded extension services were provided (e.g., feeding ratios for different types of cattle, maintenance of milking machines, etc.). Agricultural tools and equipment targeting female farmers were introduced to ease their activities in milking, milk storage, and transportation to milk collection points.

The Syunik Animal Market website promotes the services provided by the Animal Market (www.animalmarket.am) and informs farmers about them.

In addition, the website contains a page called "Farmers' Corner," where farmers can find information on advanced methods and practices in animal husbandry and related fields, including professional materials, guides, leaflets, etc.



Working as a social enterprise rather than a commercial business entity, the Animal Market also welcomes students majoring in agricultural professions, including those specializing in veterinarians, to undertake internships at its premises.

This platform is a learning hub for farmers and veterinarians from all the regions of Armenia to enrich their expertise in areas like fodder production, breed improvement, animal health, biosecurity practices, poultry and cattle farm management, and many others.

The Animal Market has great tourism potential as well. Since 2017, it has been hosting the yearly Sheep Shearing Festival, a unique attraction for tourists and an excellent opportunity for farmers from nearby villages to sell their products. The overall success of the Animal Market in the Syunik Marz can be an inspiring model for creating similar hubs in other parts of the country and, in general, serve as a successful model for the future of the agriculture sector in Armenia.



CONCLUSION

In general, the Project has shown great potential for applying innovation and being forward-looking through the example of livestock-related value chains in Armenia.

This approach has the potential for significant development at different levels of the relevant value chains, improving the quality and quantity of agricultural products. Moreover, it creates a substantial opportunity for skill development and employment for many, including women, in the country's rural areas.

There is no alternative to using new technologies and methods since there seem to be more external challenges now than at the launch of the Project – the staggering instability along the border has added further complexity to the current climate issues.

Despite the difficulties emerging from COVID and the war in Nagorno-Karabakh, the systems change achieved by the Project led to a critical improvement in the attitudes toward reasonable practices of pasture management, veterinary service, and livestock rearing. These principles continue to be applied in new SDC-funded projects in Armenia, focusing on sectors such as agriculture, tourism, vocational education, and training.

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