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ALLIANCES CAUCASUS 2
SERICULTURE, MARKET RESEARCH
NOVEMBER 2022

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Does sericulture still exist in Georgia? Answers to this question would be very different from different people’s perspectives. Some would say no because of the absence of a functional value chain, including the purposeful cultivation of mulberry trees, rearing of silkworms, and reeling and spinning of silk in factories. But some people would say yes because there are still people in rural Georgia who grow or know how to grow silkworms, artisans who make traditional crafts from silk fibre and thread, a state facility still preserves sixty-seven unique species of silkworm, retains a Silk Museum, and has recently recognized Georgian Silk as the country’s intangible heritage. Restoration of sericulture in Georgia as an industry would require a great deal of money, effort, and time, but to preserve and develop the tradition of raw silk (silk cocoon) production, as an income generating activity for rural households, and to make use of it in traditional handicrafts linked to rural tourism, does seem to be feasible. This research includes a general overview about silkworm farming, the history of sericulture in Georgia and a description of the current market system of sericulture, more precisely, raw silk production and use,¹ which is divided into three parts:

Core market - describing the basic function of supply and demand

Supporting functions - deals with inputs necessary for sericulture, access to them, constraints

Rules- informal norms and formal legislation and regulatory issues and entities related to the sector.

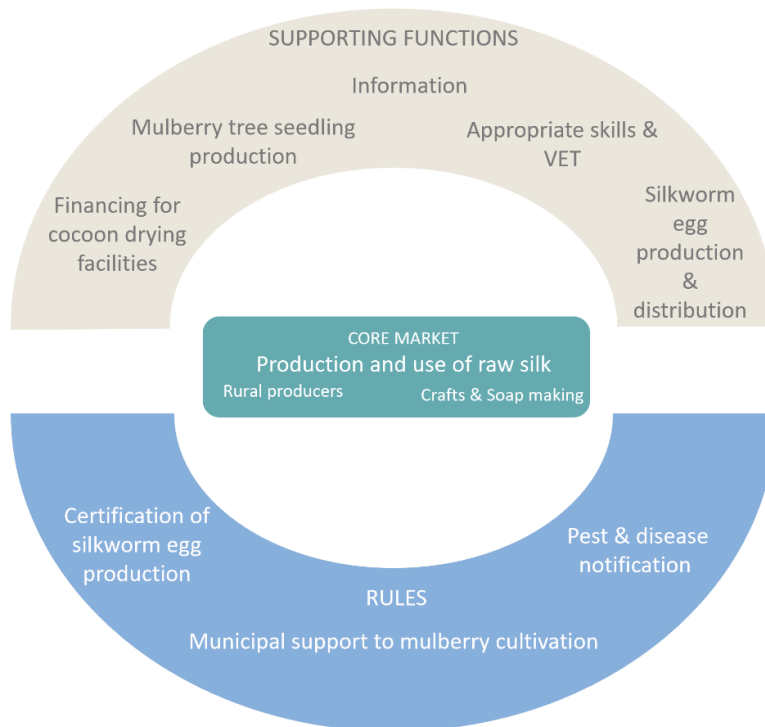


Figure 1 HH Raw Silk Production Market System Entry Points

¹ Sericulture is a complex agri based production which includes industry components, e.g., silk reeling and spinning plants to get the final product – silk fabric. As in Georgia all silk production plants were destroyed almost 30 years ago, only raw silk production and use in traditional crafts are practiced now.

The following tables contain the summary market analysis for HH level raw silk production based on the information contained within this report.

Table 1 Summary Market Analysis

| Relevance | Pro Poor Potential | Intervention Potential |
|---|---|---|
| Production and Use of Raw Silk | | |
| <p>Currently Low: Only a few cases of production and use were found during the research in the whole country</p> | <p>High: Rural families, especially women and poor, who look for additional income, are interested in the production of raw silk. Production of raw silk takes only 40 days a year and can be done alongside other agricultural activities with the involvement of all family members including children, older people, and women. Silk is a high value product and if HH have access to mulberry trees (many have their own trees) and could easily access a market for the cocoons, then silk has the potential to be a high income, low transaction cost activity.</p> <p>Unfortunately, the current market for cocoons is unstable as production in Georgia is minimal. Another avenue for income generation at the HH level is reintroducing traditional silk crafting knowledge and skills which would provide an opportunity for rural women to offer an expanded experience in the rural tourism market especially in existing areas of rural tourism concentration such as some areas of Kakheti and Imereti.</p> | <p>High as a pilot for replication: Piloting the production of raw silk and a silk workshop / collection point establishment in one municipality.</p> <p>Link local sericulture specialists, VET colleges and the Women’s Room to develop & teach a short sericulture training module relevant to rural HH producers, with the potential to be copied in other parts of Georgia.</p> <p>Facilitate the silk market players/stakeholders to promote Georgian Silk as the country’s intangible heritage.</p> <p>Work with MEPA to advocate silkworm egg and mulberry tree seedlings production and distribution.</p> |

Table 2 Systemic Constraints, Pro Poor Opportunities and Drivers

| Systemic Constraints Core Market | Pro Poor Opportunities and Drivers |
|--|---|
| <p>Lack of perceivable market, highly localized demand from some crafters or VET colleges</p> <p>Localized, fragmented, almost negligible production of silk for own or extremely localized use</p> <p>Lack of funding to government sericulture laboratory and this poor potential for outreach of support services</p> <p>Lack of linkages/coordination between silk market players, isolation</p> | <p>Development/enhancement of silk cocoon production and traditional silk handcraft teaching at VET colleges will bring rural women and youth to the local rural tourism markets and create the opportunity for an additional income for rural inhabitants.</p> |

| Systemic Constraints Supporting Functions | Pro Poor Opportunities and Drivers |
|--|--|
| Lack of certified silkworm egg production Lack of mulberry tree plantations and seedlings Lack of relevant skills & knowledge in rural HH on raw silk production and use Lack of information & promotion of raw silk production & use | If the production of raw silk at HH level was restored it would bring back the Georgian traditional silk crafting knowledge & market, e.g., VET colleges teaching & craftswomen making silk thread, silk blankets, silk soaps, etc. The tourism market would be the primary market for silk handicrafts and with more skills and knowledge more rural women will have opportunity to be included on this market gaining additional income through this value-added product, promoted as one of the intangible heritage monuments of Georgia. |
| Systemic Constraints Rules | Pro Poor Opportunities and Drivers |
| The silk laboratory lacks regulation & financial support from the government to produce certified silkworm eggs. | Locally produced high-quality eggs would be cheaper and accessible for rural people. There is an export opportunity as well. |

GEDSI IN RAW SILK PRODUCTION AND USE

During the initial research the sector seemed more female-dominated at both HH (farming) and enterprise levels. But according to our Silk Focus Group Findings, silkworm farming is an inclusive family activity where all members are involved regardless of their age or gender, see Table 3 below. All FG participants stated that during the forty days of farming, silkworms need maximum attention and intensive feeding, farmers rear silkworms along with other regular activities and that is why family groupwork is very necessary, women and men are equally involved in the whole process, and old people and children are involved mainly in feeding, cleaning, and harvesting.

Table 3 Gender Division of Roles and Responsibilities in Raw Silk Production & Processing

| Activities | Women | Men | Social Inclusion |
|---|-------|-----|---------------------------------|
| Silkworm Cocoon Production | | | Old & Disabled people, Children |
| Taking care of Mulberry trees (irrigating, pruning) | X | X | X |
| Preparation of a rearing room (disinfection, shelves) | X | X | X |
| feeding silkworms | X | X | X |
| Cleaning the waste | X | X | X |
| Harvesting cocoons | X | X | X |
| Selling cocoons | X | X | |
| USE - Processing Raw Silk | | | |
| Making silk fibre from cocoons | X | | |
| Making silk thread | X | | |
| Making silk fusion thread/fabric & Blankets | X | | |
| Making pupa oil | X | | |
| Making soaps | X | | |
| Sale | X | | |

INTRODUCTION

The ancient tradition of silk production in Georgia goes back 15 centuries and is currently on the verge of disappearance. In Soviet era Georgia produced 4.0- 4.4 thousand tonnes of cocoon per annum, 100-200 thousand rural families were engaged in sericulture and up to 6000 thousand people were employed in the silk production industry. In the 90's following the collapse of the Soviet Union the industry collapsed; silk reeling and weaving factories closed down and mulberry tree plantations fell into neglect and traditional silk markets were lost. However, there is still potential to revive silk production in Georgia, an activity once highly popular amongst rural women. The knowledge accumulated over generations is still currently available in living adherents and memory, there are still mulberry trees scattered all over the country highly adapted to a local growing condition, including intense heat. Climatic conditions favour the production of high-quality cocoons. Sericulture science has been preserved, as have genetic resources and there are still the remnants of a national tradition for making silk handcrafts. In 2018 as part of an initiative of the State Museum of Silk and the Scientific-Research Center of Agriculture (SRCA), Georgian silk was recognized as part of the country's intangible cultural heritage. But this recognition has not yet helped to revive the sericulture sector in Georgia, and it is still on the verge of extinction.

METHODOLOGY

Desk research was done to collect all existing information including media articles, scientific materials and studies connected to the silk production and sericulture in Georgia. See *Annex 4. Bibliography*. In depth, face to face interviews were held with the main stakeholders. See *Annex 1 Key Informant Table*. Current statistics for sericulture and market information are not available in Georgia. During the last 20 years there were a few attempts by local enthusiasts to pilot silkworm farming in Kakheti, Kvemo Kartli, Imereti and Ajara regions, cases included in this research.

Farmers perspectives were captured in three focus groups conducted in Kakheti, Kvemo Kartli (KK) and Imereti regions. Please see *Silk Focus Group Survey Report November 2022*. The focus group geography and participants were chosen based on their connection to silkworm farming in Soviet times and involvement in recent years. There were no significant differences between the answers of male and female participants. All FGs participants were ethnic Georgians because of lack of any current or recent sericulture practice in Azeri or Armenian communities.

Table 4 Silk FGs Geography, Gender, Age and Ethnicity

| Region/municipality /village | Kakheti / Akhmeta Municipality / Magraani Village | Kvemo Kartli / Bolnisi Municipality / Ratevani Village | Imereti / Tskaltubo & Zestaponi |
|------------------------------|---|--|---------------------------------|
| Gender | 3 Male & 3 Female | 7 Female | 3 Male & 4 Female |
| Age | 48-80 | 50-78 | 26-65 |
| Ethnicity | Georgians | Georgians | Georgians |

Wild silkworms, pests of the mulberry tree are no longer found in nature, so they are totally dependent on humans for reproduction. Sericulture, as an agricultural value chain, means the production of raw silk by raising the domesticated silkworm (*Bombyx mori*). Silkworm farming generally involves two main stages:

1. Care of the silkworm from the egg stage through to the completion of the cocoon
2. Production of mulberry trees that provide leaves upon which the worms feed.



Silkworms have four distinct life stages:

Egg: a silk moth can lay up to 500 eggs at a time in her short adult life. Within 1-2 weeks, the eggs will hatch, if they are kept at a consistent temperature of 24-28°. The eggs can be kept in a refrigerator for 260 -270 days before the incubation period starts, which is in spring and summer in Georgia.

Larva (caterpillar): Once hatched, the new silkworm larvae will be only 0.25 mm's in length. There are five larval growth stages altogether. To progress healthily, the larvae will need an abundant supply of mulberry leaves. This growth occurs over a maximum of 40 days.

Pupa: Once it is ready to enter its pupal stage, the silkworm must prepare to spin its cocoon using the silk it has stored away during the larval stage. It produces a single strand of white or yellow silk about 900 meters long to construct its cocoon, the final product. Pupa rest inside the cocoon for 7-10 days. To produce raw silk the pupa is killed in the cocoon by drying at a high temperature or by freezing or boiling in a water, if not the pupa completes its development and emerges as the adult silk moth.

Adult: Once emerged, the silk moth is a hairy little thing. Males will actively seek out the females by following the scent of their pheromones to mate. The moth stage lasts 12-14 days and the silk moth will die after the producing the eggs. One moth makes 500 eggs.

Figure 2 Life Cycle of the Silkworm

IMPORTANT CONSIDERATIONS IN THE FARMING PROCESS

SILKWORM REARING

Farmers must follow very important rules if they decide to raise silkworms which are: the preliminary disinfection of a room where silkworms will be placed, maintaining the right temperature (25-28 Celsius), ventilation and humidity in the room and feeding silkworms eight-twelve times in a day during the first three larval stages and four-six times during last two stages. They must wash their hands before feeding or any other contact with the worms and remove the old food and waste to avoid the development of mould and fungus which can kill the silkworms. Raising silkworms lasts only 40 days, but it is intensive, hard, and time-consuming work. Silkworms need constant care, which is done mostly by women.

SILKWORM PRODUCTS AND BY-PRODUCTS

When the silk cocoons are ready and pupa is killed inside², cocoons are used to produce silk cotton or thread. Furthermore, they are used in soap making, cosmetics and handcrafts, e.g., in Georgia there was a tradition of making silk blankets (handcrafted blankets filled in with silk cotton) as a dowry. The most popular and demanded by-product of sericulture are silkworm pupa. The pupa oil is used in cosmetics and soap making, and dried pupa itself is a great feed for fish.

SILKWORM DISEASES & ENVIRONMENT

Silkworms are very sensitive to the environment surrounding them. Disease³ outbreak can occur during their farming period which are connected to feeding and sanitation, which is why the disinfection of the rearing house and clean mulberry tree leaves not contaminated with pesticides or other chemicals, are very important. Environmental factors affecting the rearing of silkworms are temperature, humidity, air, and light.⁴ High rates of air pollution and extremely high levels of pest control chemicals lead to a high rate of silkworm mortality.

THE HISTORY OF SERICULTURE IN GEORGIA

In the 5th century King Vakhtang Gorgasali brought silkworm eggs from India as a trophy. Also, his Persian wife had silk dresses made specially for her in Georgia. In the 5th century book *Martyrdom of the Holy Queen*, Shushanik the author, mentions silk weaving. In Armazi Village, Mtskheta-Mtianeti region, an archaeological excavation of a tomb dated to the 2nd millennium BC, discovered a remnant of a silk and wool fabric found on the remains of a lady. The Great Silk Road passed through Georgia. Pliny the Elder (1st century AD) says that 100 thousand sesterces⁵ were sent from Rome to Shorapani, Imereti region every

² Farmers do not rear moths to produce eggs because the egg production is a scientific process which needs a long-term monitoring from the specialists, e.g., checking on disease freeness, which is possible to do only in a special laboratory.

³ [Diseases and pests of mulberry silkworm](#)

⁴ [Environmental factors affecting rearing of Silkworm](#)

⁵ Ancient Roman coins

year to buy silk (Geography of Georgia by Vakhushti Batonishvili). The Marco Polo in the 12th century noted that silk-making and silk-weaving were highly developed in Georgia, with Georgians using gold thread in making beautiful silk fabrics the like of which he had never seen anywhere.

By 1844, there were more than 3,000 domestic looms in Eastern Georgia and up to 1000 looms in Kutaisi on which cotton, wool and silk fabrics were made by villagers. Artisans were making silk headscarves, belts, gloves, socks, and blankets. According to a census conducted in 1848, 210 thousand families were processing silk. In the same period, a silk spinning factory was established in Tbilisi by a French merchant, Castella in 1828. In 1895, the first thread-making factory was opened in Khoni municipality, and the first sericulture cooperative was launched in Imereti with 2500 members from 40 villages. During this period, more than 100 tons of silk thread were sent from Khoni to Marseille, Lyon, and Milan. In the 1960's as part of the Soviet Union, Georgia was producing 4-4.5 tons of silkworm cocoons and 100-120 thousand households were employed in sericulture. At that time Georgia had two sericulture selection stations, five silkworm egg factories, two mulberry tree selection stations, five cocoon winding factories and two silk weaving factories, producing 4.5-5.0 million meters of silk fabric. The system was centralized and fully managed and financed by the government, so when the Soviet Union ended the silk industry in Georgia stopped working and in a few years all infrastructure and mulberry tree plantations were sold and ruined.

GEORGIAN SILK - AN INTANGIBLE CULTURAL HERITAGE MONUMENT

In 2018, Georgian silk was given the status of an intangible cultural heritage monument. The State Silk Museum was one of the initiators along with the Silk Laboratory and two sericulture enthusiast women from Kakheti. Georgia joined the UNESCO Convention on the Protection of Intangible Cultural Heritage in 2007. Which means that the state recognized the necessity of protection of intangible heritage and assumed the obligations stipulated by the convention ensure the identification, documentation, research, preservation, protection, revival, and promotion of the intangible cultural heritage throughout formal and informal education for its transmission to the younger generation.⁶ There are 66 monuments in the Georgia's Intangible Heritage list⁷ now.

The role of the State Silk Museum as a market player is to promote Georgian Silk. It has rich exhibitions, a sericulture library and moth and butterfly Collection dated to the 19th century. The visitors are mainly school children, tourists, and artists. In 2015 the museum did four-month educational project for adults *Maintain Brilliance* with the support of *DVV international, the German Adult Education Association*. The museum made a special diary-textbook for practicing silkworm breeders. In 2021 Tbilisi City Hall started a rehabilitation of the museum's historical, 19th century building. The museum will be re-opened in 2023. *See Annex 3. Photo Gallery, Photo 1.*

⁶ <https://www.heritagesites.ge/uploads/files/5b7e92d177554.pdf>

⁷ <https://www.heritagesites.ge/uploads/files/6229f9466269c.pdf>

CURRENT SILK MARKET OVERVIEW

The current market for silk cocoons is unstable as production in Georgia is almost minimal. Another avenue for income generation at the HH level is reintroducing traditional silk crafting knowledge and skills which would provide an opportunity for rural women to offer an expanded experience in the rural tourism market especially in existing areas of rural tourism concentration such as some areas of Kakheti and Imereti.

MAIN SILK MARKET PLAYERS

The main existing market players in silk sector are Sericulture (Silk) laboratory of Scientific-Research Center of Agriculture (SRCA) of the MEPA, the State Silk Museum, rural producers of raw silk (women enthusiasts / rural households), traditional crafts makers, handmade cosmetics/soap makers, and VET colleges, as skills developers, and users of raw silk in their craft programmes. *See Annex 1. Key Informant Table*

CORE MARKET

RAW SILK PRODUCTION AND SUPPLY

Producing raw silk that is silkworm cocoons for local handicraft and sale is currently the core of the sericulture and silk market in Georgia. From 2007 to date, we found seven cases of silkworm cocoon production in the whole country. Three were the initiatives of local governments, one was a project of the Agriculture Science Academy and the Silk Laboratory of Scientific-Research Center of Agriculture (SRCA) of the MEPA, one was an individual entrepreneur, one was a cooperative and the other one was a popular young vlogger from Imereti region. These cases are presented in detail in *Annex 2 Silkworm Farming Cases*. These cases show that there is an interest within the rural population in silkworm farming, especially from women who are poor or want to make additional income. But they also show that farmers had problems selling the raw cocoon once produced. These initiatives faced challenges that led to the failure of moving those initiatives forward, including; difficulties in sales, lack of support following changes of decision maker authorities in local government, death of silkworms because of eating mulberry leaves sprayed against pests, in some areas a lack of interest of locals toward silk production, lack of infrastructure and buildings for the production of cocoons and lack of tourists after Covid-19 pandemic who were buying souvenirs made from cocoons.

The Silk FG survey confirmed the above-mentioned constraints. The main constraints for the adoption of sericulture practice all FG participants named were:

- * *Lack of suitable rearing house / equipment* – in soviet times people were rearing silkworms in their houses but now the most of them have renovated these rooms and would need to have separate buildings or rooms specially for silkworms.

- * *Lack of sufficient number of mulberry trees* – 1 or 2 mulberry trees are not enough to feed even 1 g silkworms which can produce 4 kg cocoons. Farmers understand, that if they decided to start silkworm farming, they would need to plant more mulberry trees.
- * *Lack of access to silkworm eggs* – silkworm eggs are not for sale in Georgia. A Biology teacher, FG participant from Kvemo Kartli, said that she wants to grow silkworms in school and involve her students but do not know where to buy silkworm eggs.
- * *Lack of Market* – The farmers main concern is lack of markets for the cocoons, and they will not start farming without knowing that someone will buy it.
- * *Lack of knowledge and trainings* – the farmers think that formal training courses in VET colleges would be good, but they also mentioned online short courses which could be more useful in terms of time efficiency and the possibility to study from home and involve other family members as well.
- * *Lack of support from the government and funding* – the farmers mentioned their need for small grants for arrangement of rearing house, for purchasing silkworm eggs and mulberry tree seedlings.

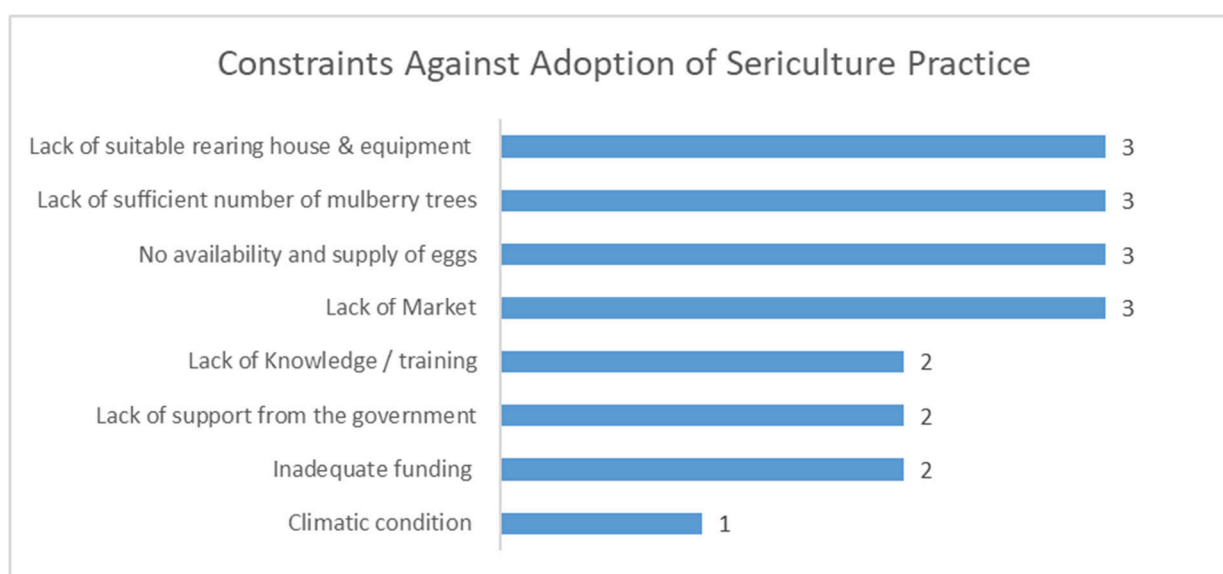


Figure 3 The Main Constraints Against the Adoption of Sericulture Practice Amongst Rural Producers

The FG participants has the following opinions on what needed to be done to revive silk farming in rural areas.

| | Core Market | Supporting Functions & Rules |
|---|---|--|
| How to enhance sericulture practices in villages? | Development of Silk cocoon collection points | Information about the cocoon selling opportunities / markets |
| | Government support in providing mulberry tree seedlings and silkworm eggs | Small grants for silkworm farming e.g., for equipment of a rearing room, access to consultancy & knowledge |
| | Sericulture promotion and encouragement | |

Figure 4 The Farmers Perspectives on the Potential for the Revival of Silk Farming

RAW SILK USE/DEMAND

During the research we found out that a few small-scale handmade cosmetics and soap makers are using silk cocoons and silkworm pupa oil. Three interviewed cosmetics/soap maker women have used a kg of cocoons and a hundred grams of pupa oil in total, to make soaps and face cream. They bought cocoons outside of Georgia, on AliExpress or Amazon, because they did not have any information concerning their availability in Georgia. An agriculture cooperative from Akhmeta had been supplying VET colleges in Akhmeta and Kutaisi with their cocoons. These colleges have modules on *Silk Paper (fusion) Making* as a part of an Artistic Weaving programme. Akhmeta College Director said that students now are not choosing the Silk Paper Making module now because of a lack of raw silk. Dito Arindauli, owner of Tushuri Matkli Ltd from Akhmeta reared silkworms by himself eight years ago to make silk fibre and sell it. ‘There was a market demand for silk fibre and handmade silk thread, I tried to make it by myself but was not able to get the proper fibre from silk and gave up,’ Arindauli said.

A few cases of making exclusive handcrafted blankets filled with raw silk fibre were found as well but only at HH level. It is an old Georgian tradition to make silk blankets for dowry. The research showed that demand for raw silk exists, but there is a lack of information and linkages between producers and buyers. Also, there is a possibility to sell small quantities of silkworm cocoons⁸ and silk fibre⁹ online, it is highly practiced now in China and India where small-scale producers are directly selling them online so, this could be a possible selling option for Georgian producers.

SUPPORTING FUNCTIONS

SILKWORM EGG PRODUCTION IN GEORGIA

Many countries import silkworm eggs from the main producers China and India. Even Azerbaijan which has a large state funded silk industry imports the eggs from China. But Georgia has one of the richest genetic funds of silkworms in the world. 67 species are preserved in *the Silk Laboratory of the Scientific-Research Center of Agriculture (SRCA) of the MEPA*, out of which eight are Georgian endemic species, six white cocoon and two coloured (light green and orange). They have been preserved from the 19th century. Kakhetian Green has green fibre naturally, Kutaisi Orange has orange fibre naturally, Iveria, Tbilisuri and Mziuri. Mziuri is the only silkworm which makes a 2,000 meters long silk thread. *See Annex 3. Photo Gallery, Photo 3.* The Head of the Laboratory Nargiz Baramidze patented the five above mentioned species in 2016.

The Silk Laboratory has a building in Tsilkani Village, Mtskheta-Mtianeti region, where every year five staff members of the laboratory rear all these silkworms on small shelves in a 100 m² building, *see Annex 3. Photo Gallery, Photo 5.* The produced eggs are laboratory tested, cleaned, and kept in refrigerator till the

⁸ [amazon.com](https://www.amazon.com)

⁹ [ubuy.ge](https://www.ubuy.ge)

next years rearing period, *see Annex 3. Photo Gallery, Photo 4*. The laboratory has a small mulberry tree plantation which is not large enough, and the staff brings additional leaves from the neighbouring village to feed the worms. The laboratory is underfunded, has a very poor budget and all laboratory equipment. Microscopes, air conditioners, refrigerators were bought piecemeal. They do not even have funds for basic things such as the paper and plastics for making the cocoons. The staff salaries are very low, their mulberry tree plantation is damaged by cows, sheep, and drought, because the laboratory does not have money for fencing and watering system.

THE POTENTIAL FOR COMMERCIAL SILKWORM EGG PRODUCTION AND SALE

On the international market the price for 1 gram of silkworm eggs is 1 USD. According to the head of the sericulture laboratory the price is profitable as 16-18 kg cocoons are needed to make one kg (1000 g) eggs which makes around 55 USD per kg cocoon. The laboratory needs more rooms for silkworms to produce more eggs for sale to local farmers. If the laboratory decides to sell the eggs, they will need to produce certified eggs; meaning that the laboratory must examine and check every mother moth and make special data system to ensure that eggs are disease free, which is not possible now because of the lack of the specific documentation and regulations which need to be developed by the Scientific-Research Center of Agriculture (SRCA) which the laboratory would follow in order to issue a certificate and prove the quality of the eggs. The laboratory would need two to three years to produce commercial eggs. The head of the SRCA Levan Ujmajuridze says that their first goal was to preserve the species and the second goal to produce commercial eggs. 'Now we are not doing this because there is no demand', he said. However, the laboratory head says that the demand from internal and external markets exist, but they can't supply because the laboratory does not have the eggs to sell. Enabling the sale of eggs commercially would entail: the SRCA making regulations for the certification of the laboratory and the development of a system for the production and sale of certified eggs, the allocation of more funds for the laboratory which needs a bigger building for growing the worms and the extension of and care of the mulberry tree plantation, hiring more staff members, and the purchase of some laboratory equipment.

MULBERRY TREE SEEDLING PRODUCTION

Every year fewer mulberry trees remain in Georgia. Most old plantations were sold and destroyed; and new trees are not planted because sericulture stopped. Georgia has endemic and hybrid species of mulberry trees preserved by the SRCA, but they are not enough for mass production. However, Ajara Agro Service Center can also produce mulberry tree seedlings in case of demand from the farmers. According to our focus group survey, the number of mulberry trees in villages decreased by 70-90 percent over the last thirty years. Farmers are willing to plant mulberry trees but do not know where to buy seedlings and the existing nurseries are not producing them. According to the FGs participants, in their villages/municipalities the number of mulberry trees decreased during last 30 years by 70-90 percent. Reasons were mulberry tree disease and the stopping of silkworm practice. People cut the trees and used them for heating. All the participants and their villagers have at least 1 or 2 mulberry trees in their gardens. They are using neighbours' trees for additional feeding for free. All participants are willing to plant more mulberry trees but do not know where to buy the seedlings.

SKILLS & CAPACITY

Sericulture as an elective subject is a part of a general Agronomy programme at the Agrarian University but the students are not interested to study it because of absence of sericulture in practice. The National Center for Educational Quality Enhancement which is the responsible body for the development of vocational education in Georgia, made a book and a two-years long study module on sericulture for the VET colleges four years ago but it is not used by the colleges because of the lack of the interest from the students. VET expert Tea Tsomaia thinks that would be better to make a short, two-month long study module of sericulture for the VET colleges which will be focused on silkworm farming and raw silk (cocoon) production. As already mentioned, rural people over age 60 still remember how to take care of silkworms, but younger people know nothing about it. The SRCA prepared a short guideline for farmers, *Silkworm Farming* which is quite easy to understand and learn. The guideline is uploaded on the MEPA's online library. See the Guideline here. All participants of the Silk FGs knew how to prepare a rearing room and could name the main silkworm diseases. Most farmers got this knowledge from the practice or from parents/grandparents. The farmers think that a short-term training course on silkworm farming, at VET college or online, is necessary. They also think they need information about the market - cocoon selling opportunities and prices, and how to process and use the cocoons to make an additional income.

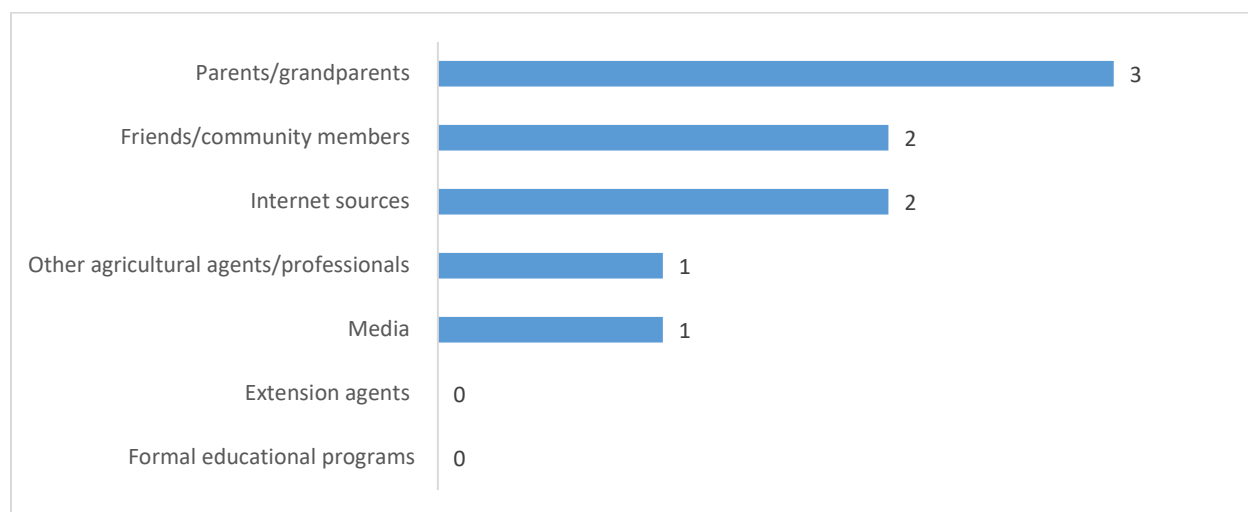


Figure 5 Sources of Information

INFRASTRUCTURE

All industrial infrastructure for silk collapsed in Georgia and without big investments the final product – silk fabric can no longer be made here. But if we consider sericulture as a household level economic activity with the final product as silk cocoon and fibre connected to the traditional handicrafts and cosmetic products, only the following infrastructure would be needed:

- Basic infrastructure for silkworm rearing (the dedicated rooms, shelves, etc.) at the farmers' level
- Cocoon drying facilities at the community level
- Mulberry tree nurseries and plantations

The only soviet era cocoon collection & drying facility left, from hundreds in the country, is in Akhmeta municipality, Kakhti Region, see *Annex 3. Photo Gallery, Photo 6*. The building is owned by the State

Property Agency of the Ministry of Economy. Local former sericulture agronomist Nunu Nakhutsrishvili (cooperative Abreshumkhvevia) managed to save this place from the privatization and demolition. There is a simple silk loom (threading machine) standing in the shed. With the help of the SRCA, Nunu was giving silkworm eggs to local women and afterwards purchasing the cocoons from them, but she stopped working because of lack of finances and support from the government a few years ago. *See Annex 2. Case 6.* Local sericulture enthusiasts wanted to restore the function of the building and make a silk workshop there, for leasing they have applied to the State Property Agency of Ministry of Economy and asked for support to the MEPA several times but without any results.

GOVERNMENT INVESTMENT

The government plays a main role in sericulture through the preservation of silkworm breeds in the Sericulture Laboratory and in preserving the heritage of silk production through the State Silk Museum. More systemic support is would however be required to help revive some aspects of the industry. Previous attempts failed through lack of sustained systemic support and over ambitious schemes. Coordination between the different levels of the silk sector stakeholders and market players is very weak. There are no unions or associations in this sector.

In 2015 the Industrial Development Group of the Ministry of Economy prepared a feasibility study on the sericulture industry revival in Georgia entitled, *Business Model Silk House*. The idea was to develop all the parts of the sericulture industry value chain in one enterprise, meaning to plant a 100-ha mulberry tree plantation, to construct a 17,000 m² building for silkworm rearing and a silk processing factory. The project budget was 5 million USD. A businessman, the founder of Askaneli Brothers company, expressed willingness to implement the business model. To prove his interest, he brought two small silk weaving looms and 100 thousand mulberry tree seedlings from Uzbekistan and gifted them to the government, the MEPA. The seedlings were distributed to the rural population by the MEPA ICCs, out of which only 600 trees are alive now and 300 we found out in Akhmeta municipality, *see Annex 3. Photo Gallery, Photo 7.* The Silk House idea failed because the government refused to co-fund this ambitious project and business also was not ready to take on all the expenses of the restoring the industry. This case showed that Georgia was not ready to develop the silk industry value chain from zero and supporting small farming practices would be better. In the same year the Ministry of Agriculture conducted several special meetings on sericulture, five rural sericulture cooperatives were registered (all women) and local municipalities started funding some small sericulture projects (see case studies 1, 3, 4 and 5). Nowadays only one cooperative in Akhmeta survives, as for local municipalities they did it only once (Bolnisi, Kharagauli, Khoni) and refused to continue funding the silk farming initiatives because of problems related to selling raw silk. In Azerbaijan the government has invested hugely in redeveloping a national silk industry. A brief description can be found in *Annex 5.*

The MEPA SRCA Silk Laboratory in Tsilkani village, Mtskheta-Mtianeti region, produces silk eggs to preserve sixty seven species of silkworms, though it is not certified due to the non-existence of any regulation from the State, *see Supporting Functions section.* There are also no valid national standards for the production of cocoons, silkworms, and preserving and planting mulberry trees.

ANNEX 1. KEY INFORMANT TABLE

| # | Key Informant | Date | Organization/ Specialization | Location and Link to Project |
|------|----------------------|-----------------|---|---|
| KI 1 | Nunu Nakhitsrishvili | July, 2022 | Sericulture cooperative Abreshumkhvevia | Akhmeta Municipality, Kakheti Rural Cooperative 'Abreshumkhvevia' (Silkworm) was founded in 2015. It has nine members and 2.2 ha leased land parcel in Akhmeta, where they started mulberry tree plantation. Nunu Nakhitsrishvili, former local sericulture agronomist, is a head of this cooperative. She has been leading/organizing silkworm cocoon production in Akhmeta from 2015 to 2021. Nunu takes care of up to seven ha of old mulberry tree plantations in different places of Akhmeta and a soviet time cocoon collection and drying building/shed, now owned by the Ministry of Economy. In 2022 they stopped silkworm farming because of sales problems, they were not able to sell the cocoons and pay back to the farmers. Potential scale - to involve in silkworm farming 15 HHs in the first year and 50 HHs in second year, jobs - the same as HHs, NAIC - depends on the amount of the cocoons produced. Potential to be involved in skills development and trainings, can be linked with the local Women's Room and a VET collage, possibility of making a silk workshop place in Kakheti - silk hub. <i>See Annex 2. Case 6.</i> |
| KI 2 | Lamara Bejashvili | July, 2022 | IE Lamara Bejashvili | Kvemo Magaro Village, Signagi Municipality, kakheti region Lamara tries to do the whole cycle of silkworm beeding by herself, from egg production to hand kneetted things, promotes sericulture among rural women, schollkids and tourists, has good communication and storyteller skills, hosts silk tours, makes different silk connected products, produces silkworm eggs and pupa oli which quality is under suspesius from the sericulture spesialits. Potential partnership with other rural women who are interested in silk. Potential to be linked with the silk museum, tourism sector, Signagi Women's Room. <i>See Annex 2. Case 2</i> |
| KI 3 | Nutsa Tsiskarishvili | September, 2022 | Otia's Ezo - a family museum in Tskaltubo | Tskaltubo, Imereti region In 2022 Nutsa together with four local women started rearing silkworms, very small amount, four grams in total. Nusta took silkworms from Lamara Bejashvili (see KI2). Her motivation is to preserve the Georgian tradition of silkworm farming and promote Georgian silk among the visitors of their museum. She is willing to continue silkworm farming in future. |
| KI 4 | Mariam Rekhviashvili | September 2022 | School teacher | Ratevani village, Bolnisi municipality, Kvemo Kartli region. Mariam Rekhviashvili teaches biology at the village school. She is a sericulture enthusiast and used to rear silkworms in school during the Soviet times. She has written a project Silkworm Rearing Teaching at School and is ready to implement it with her school students in May 2023 if she will be able to find silkworm eggs. She |

| | | | | |
|-------|----------------------|--------------|---|---|
| | | | | thinks that silkworm rearing practice at schools is necessary to preserve sericulture in Georgia. |
| KI 5 | Nugzar Dzamukashvili | August, 2022 | VET college Aisi | Alvani, Akhmeta municipality, Kakheti region The college has a teaching module Silk Paper (fusion) which is a part of the traditional craft teaching programme. In 2020 they bought silk cocoons from a local sericulture cooperative Abreshumkhvevia (see KI1) to teach silk paper making. The cocoons were used for making silk art pieces. Our students are not choosing this module now because of lack of silk cocoons, if the cocoons are available for sale locally the college will continue the teaching, - said Nugzar Dzamukashvili. |
| KI 6 | Dito Atindauli | August, 2022 | Wool company Tusheti | Kvemo Alvani Village, Akhmeta municipality, Kakheti region Dito reared silkworms ten years ago as he noticed a demand for silk fiber on Tbilisi central market which he had been supplying with wool thread. Dito could not produce good quality silk fiber because of lack of information and knowledge about it and stopped. He is still interested in silk fiber production and would learn how to make it. |
| KI 7 | Tamar Mikadze | August, 2022 | Herami, a soap making small enterprise | Tbilisi Tamar is interested in making silk soaps and buying silk cocoons for this reason. She sells her product at Tbilisi touristic market and wants to export to Dubai and Iran where she has sent samples recently. She said that for the export she needs a BIO certificate which she has not been able to get yet because of a high price and lack of information. I could make BIO silk soaps, - she said. |
| KI 8 | Tamar Mikeladze | August, 2022 | Kumpa, a soap making small enterprise | Telavi City, Telavi municipality, Kakheti region. Tamar makes handmade soaps and two years ago she launched a silk soap line for which she bought silk cocoons on Aliexpress.com The cocoons were expensive, around two gel per cocoon and Tamar stopped making silk soaps. She sold the trial batch, a hundred pieces, in a short time. |
| KI 9 | Maia Devnozashvili | August 2022 | Demas Soap, a soap making small enterprise | Balichi village, Bolnisi municipality, Kvemo Kartli region Maia makes her soaps mainly from locally available wild botanicals. She collects chamomile and other medical herbs and uses them for soap making. She did a trial batch of silk soaps, 200 pieces, three years ago. She used silkworm cocoons and pupa oil which she bought from Lamara Bejashvili (see KI2). She said that silk soaps are very good for face skin, and she sold all of them. She has not tried to continue making silk soaps because the cocoons and pupa oil are not available for sale in Georgia. |
| KI 10 | Levan Ujmajuridze | July, 2022 | The Scientific-Research Centre of Agriculture (SRCA) of the Ministry of Environment Protection and Agriculture (MEPA) | Tbilisi In order to restore the scientific-research activities in agricultural sector, the government of Georgia on 13th of February 2014 has established the LEPL Scientific-Research Centre of Agriculture (SRCA). It has a sericulture laboratory (see KI11) and separate department for plants where they preserve mulberry tree endemic species. The Centre plays a main role in certification of sericulture laboratory which is now not certified and consequently cannot produce silkworm |

| | | | | |
|-------|--------------------|-----------------|--|--|
| | | | | eggs for selling. We have a special group of experts in livestock department who could do all normative paperwork if its necessary, - he said. |
| KI 11 | Nargiz Baramidze | July, 2022 | Sericulture Laboratory of the SRCA of the MEPA | Tsilkani Village, Mtskheta municipality The Sericulture laboratory mission: collection and preservation of silkworm and mulberry germplasm, prevention and control Silkworm and Mulberry disease. The lab preserves 67 species of silkworms. The laboratory has a potential of silkworm egg production for selling in Georgia and outside of the country if it will be certified. Also, a potential to be involved in promotion of sericulture and development of VET teaching materials. |
| KI 12 | Nino Kuprava | September, 2022 | The State Silk Museum Tbilisi Director | The State Silk Museum, located in Tbilisi, promotes Georgian silk as a cultural heritage, develops silk related projects including teaching the farming and using silk in traditional crafting. The museum is funded from the state budget. The museum is now closed because of the rehabilitation of its historical building. Will be opened in a year. The museum is interested to continue silk farming teaching and to make a new tour Silk Tour in Tbilisi if donor will be found. The museum has potential to become City hub for silk, potential of partnership with rural silk farmers, possibility to support developing the linkages between rural producers and traditioanl crafters, who are interested in buying a raw silk, potential to advocate Georgian silk as a cultural heritage |
| KI 13 | Tea Tsomaia | August, 2022 | National Centre For Educational Quality Enhancement | Tbilisi Tea is a VET Expert of the centre. Four years ago, she was involved in VET research which identified that sericulture could be taught in VET colleges. The centre made a sericulture teaching book that time but did not develop a teaching module yet. We could do a short-term sericulture teaching module if any organization will be interested to work on it with us, - she said. |
| KI 14 | Badri Bakhtadze | July, 2022 | Information-Consultation Centre of Khoni municipaity | Khoni Municipality, Imereti Badri, as Khoni ICC expert, was involved in sericulture revival project in 2015. See the details in Annex 2. Case 3 below |
| KI 15 | Murman Arjevanidze | July, 2022 | Local Agriculture Expert Former agriculture adviser of the mayor | Kharagauli municipality, Guria See the details in Annex 2. Case 4 below |

ANNEX 2. SILKWORM FARMING CASE STUDIES

CASE 1. BOLNISI MUNICIPALITY, KVEMO KARTLI

In 2006 Bolnisi municipality announced a competition for local economy development and Silk LTD, which presented sericulture reviving project, won it. Initially, 160 thousand GEL was allocated from the local budget for Silk to develop this industry, but the enterprise received only 45 thousand GEL. They imported three kg of silkworm eggs from Japan and distributed silkworms to 355 families for raising. Silk LTD bought back more than 1000 kg cocoons from the farmers. "Some families took 1000 GEL depending on the weight of the cocoons, some two, three and even six thousand. People got income. But the municipality didn't give us the promised money in full and we stopped," says Lamara Sarishvili, director of Silk LTD.¹⁰ As the enterprise didn't have a loom to make a thread, they started making various products from silk felt, including clothes and accessories. Felt specialists were invited from Tbilisi but the difficulties in sale brought the enterprise to a stop. Silk LTD is still registered but hasn't done anything after that.

CASE 2. SIGNAGI MUNICIPALITY, KAKHETI 2012 - 2022

Lamara Bejuashvili is an individual entrepreneur from Kvemo Magaro Village, Signagi Municipality. She is a master of folk crafts and a popular silkworm enthusiast. Since 2012 Lamara has grown silkworms in a small 12m² garden shed in her garden. *See Annex 3. Photo Gallery, Photo 2.* She is producing silk eggs and other silkworm sub-products in a primitive way, as she says, as her grandmother taught. In June and July, during the season, she is hiring 3-4 local women who are bringing mulberry tree leaves and helping in feeding. Lamara says that 3-4 households in her village wanted to grow silkworms and they could produce in total 50-70 kg row cocoons, but she hasn't had the money to pay them. Lamara is the only one in Georgia who goes through all the stages of silkworm breeding. She preserves silkworm eggs for the next year, uses silkworm by-products (excrements, mulberry tree leaves leftovers, silkworm pupa) and cocoons. She makes silk thread on a wooden spindle-wheel for demonstration reasons and has one hand weaved silk scarf to show when people come to her house. During last ten years Lamara had a few small grants from different NGOs (the Center for Strategic Studies, Women for Georgia, Elkana) and is still seeking funding for building a new workshop in her village. In 2022 she received a certificate which entitles her to use the Kakheti regional brand Experience Kakheti trademark.¹¹ Lamara's produces:

¹⁰ Information source: <http://aaf.ge/index.php?menu=2&jurn=17&rubr=1&mas=628>

¹¹ Experience Kakheti is a regional brand introduced by the Visegrad Fund project Enhancing Rural Economy Through regional Branding in Kakheti, in February 2022. 19 small and medium producers from Kakheti region have received the certificates so far, one of them is LTD Leanka, our client dairy factory from Dedoplistskaro

| Product/service | Description | Amount | Price per one | Sales | Notes |
|---------------------------------|---|----------------------|-----------------------------------|-------|---|
| Silkworm eggs | Lamara produces the eggs but can't sell them legally. ¹² | 70 g per year | 1 USD | 0 | In 2019 she gifted 36g eggs to Agro service Center of Ajara, In 2022 she gifted eggs to four women enthusiasts (4 g in total) |
| Silk water | Technology is unknown | 30 litters | 20 GEL per 100 ml. | N/A | |
| Silkworm Pupa Oil ¹³ | Silkworm pupa oil is used in cosmetics and soap making | 2 kg per year | 30 GEL per 1.5 g | N/A | Lamara does not make pupa oil by a traditional pressing method. 'It is how centuries ago this oil was made', she says and keeps her method secret |
| Silk soap | Ordinary soap wrapped in silk cotton | Max. 20 | 10 GEL | N/A | |
| Silk Wine | Rkatsiteli wine aged in Silk (technology is unknown) | 20 Bottles | 150 USD | 0 | |
| Tea from Silkworm leftovers | Silkworm's leftover mulberry tree leaves in silk cotton bags | N/A | 2.5 GEL per bag | N/A | |
| Eco Farm Excursion | Introducing silkworm farming and its products | Schoolkids, tourists | 5 GEL per kid, 20 GEL per tourist | | Spring, summer, Autumn |

CASE 3. KHONI MUNICIPALITY, IMERETI 2015

Khoni municipality, the Agriculture Science Academy and the Silk Laboratory of Scientific-Research Center of Agriculture (SRCA) of the MEPA started a long term, ten years long sericulture project in 2015. The goal of the project was restoring the mulberry tree plantations, production of cocoons, silkworm eggs for export and silk thread locally. Badri Bakhtadze, who was managing the project says that they counted five thousand mulberry trees in Khoni and received five grams of eggs from the Silk Laboratory. They involved schoolchildren who were helping in feeding. Even the King of Georgia, David Bagrationi with his wife visited Khoni to see the silkworms but the project stopped in the same year. Most of silkworms were poisoned and died. Nobody knows exactly why, but there is a suspicion that the silkworms ate the leaves sprayed against pests. Sericulture needs to be subsidized by the government, this is the only way to restore this sector, says Bakhtadze.

CASE 4. KHARAGAULI MUNICIPALITY, IMERETI 2018

Kharagauli municipality initiated a sericulture reviving project in 2018. They found up to hundred households in the villages who wanted to grow silkworms. The municipality bought silkworm eggs, incubated, and distributed them to the farmers. The supervisor of this project Murman Arjevanidze says that he found a buyer in Turkey who bought the cocoons, and the farmers received their money. He says that the project was successful but was not supported by a new mayor in the next year, specifically the local government refused to

¹² Only certified sericulture laboratory can sell the eggs legally. This needs sorting out somewhere in the text you need to state this explicitly in the pertinent section, supporting functions? We keep mentioning certification but not explaining it properly please do it in the text. It is looking more and more as if this is a key constraint. Also it is a bit silly in this instance because I'm sure no one is checking if she sold the eggs informally to make handicrafts?!

¹³ <https://patents.google.com/patent/WO2014071736A1/en>

fund this project from the local budget. ‘I also left my job at the municipality, and no one is left there who cares about sericulture’, he said.

CASE 5. KOBULETI MUNICIPALITY, AJARA 2019 – 2020

Ajara Agro Service Center had small pilot sericulture project in 2019 and 2020, funded by the Ajara government. The purpose of the project was to demonstrate silkworm farming to the local farmers. In the first year the Center received 10 grams eggs as a gift from Lamara Bejashvili (*see the case 2 where is 1*) and the second year they bought 20 gr. eggs from Turkey. In total they produced 60 kg raw cocoons. A portion was used to make t silk thread on a mechanical loom. The Center representative says that the project was finished, and they are not going to continue because in Ajara only two municipalities have the potential to start silkworm farming – Kobuleti and Keda and the locals are not interested with it at all.

CASE 6. AKHMETA MUNICIPALITY, KAKHETI 2015 – 2020

Rural Cooperative ‘Abreshumkhvevia’ (Silkworm) was founded in Akhmeta municipality in 2015. Unlike the most of cooperatives in Georgia, which were created and supported by the donor funded state programmes, this cooperative was created with the initiative of the sericulture enthusiast women and have never had any support from the government or donor funded programmes. It has nine members (five members from Kakheti, two from Tbilisi and two from Imereti) and 2.2 ha leased land parcel in Akhmeta, where they started a mulberry tree plantation. Nunu Nakhutsrishvili, former local sericulture agronomist, is a head of this cooperative. She is in her 70s and says that sericulture is her life and will do everything to continue silkworm rearing. From 2015 to 2021, Nunu with her associates, up to 15 women from four villages in Akhmeta, out of which only four women are members of the cooperative, have been growing silkworms and producing 250-300 kg raw cocoons annually. Nunu takes care of up to seven ha of old mulberry tree plantations in different places of Akhmeta and a soviet time cocoon collection and drying building, now owned by the Ministry of Economy. These properties are in the privatization list and can be sold by the state anytime. Nunu and sericulture enthusiasts from Akhmeta do not have the money to buy it and just keep an eye on the auctions. Initially Nunu was selling the cocoons in Tbilisi to artisans who are making souvenirs for tourists and paying the money to the farmers – 15 GEL per kg, but when tourism stopped because of COVID-19 she couldn’t sell any and stopped producing the cocoons in 2022. Only one cocoon collection and drying building, from hundreds in the country, was left in Akhmeta municipality. Nunu managed to save this place HOW from the privatization and demolition. She wants to make silk workshop where she can promote Georgian silk and teach young girls and boys. She has a simple silk threading machine to demonstrate the silk thread making. Nunu several times went to the Agriculture Cooperatives department of Rural Development Agency and asked for support in leasing the mulberry tree old plantations which left in Akhmeta, *see Annex 3. Photo Gallery, Photo 8*, and the building but did not abbreviations NO get it. She is disappointed and intends to cancel the cooperative as the members are not paying the fee.

‘In Kakheti only we have preserved seven ha of mulberry plantations in one municipality, new trees were planted by villagers as well and in the whole country only we saved the building, which is functional and is not ruined. The main problem for us is selling of our product. A silk workshop could attract tourists and artisans and solve the selling problem’, she says.

Nutsa Tsikarishvili is a very popular young vlogger and a representative of a famous touristic destination in Tskaltubo, Imereti Otia's Ezo¹⁴, Georgian writer's Otia Ioseliani's museum and farm. Nutsa saw a video about a silk farmer Lamara from Kakheti and decided to start rearing silkworms. After receiving one gr. eggs as a gift from Lamara, she found four families in Tskaltubo who agreed to raise them. Nutsa made one video blog about her silkworms on Facebook which has reached 82 thousand views and 680 comments. Most of the comments were positive. Nutsa preserved some eggs for the next year and is going to continue the promotion of sericulture in future. 'I am confident that without the support from the government this sector will die soon. I will do everything I can but one or two people cannot save the sector, she says.

¹⁴ [Otia's Ezo](#)

Photo 1. The Silk Museum Tbilisi. *See page 10.*



The State Silk Museum under the renovation, and examples of the cocoon and butterfly collections

Photo 2. Silkworm rearing room. *See page 19, Annex 2, Case 2.*



Lamara Bejashvili's small garden shed in Magaro Village, Signagi, July 2022

Photo 3. Endemic Georgian species of Silkworm. See page 13.



Kakhetian Green, Kutaisi Orange and Mziuri cocoons produced by the Silk Laboratory

Photo 4. Silkworm eggs. See page 13.



Silkworm eggs produced by the Silk Laboratory

Photo 5. A room for silkworm rearing. *See page 13.*



Silk Laboratory Rearing Room

Photo 6. A cocoon collection & drying facility. *See page 15.*



A Soviet era cocoon collection & drying facility in Akhmeta municipality

Photo 7. New Mulberry tree plantation. *See page 16.*



New mulberry tree plantation in Akhmeta municipality, Kakheti

Photo 8. Old Mulberry tree plantation. *See page 21, Annex 2.*



Old Mulberry tree plantation in Akhmeta municipality, Kakheti

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- Diseases and Pests of Mulberry Silkworm (n.d.) https://silks.csb.gov.in/coochbehar/wp-content/themes/common_district/coochbehar/dpm-frame2.html

Azerbaijan has been actively developing a sericulture sector over the last decade, when in Armenia it has collapsed. Azerbaijan is an example of a post-soviet country which continues to develop this sector. Silk has a more than 2,000-year history in Azerbaijan. During the Soviet Union more than 150,000 rural families were engaged in cocoon production and more than 14,000 people worked in the silk industry. In the early 1990's the Azerbaijan silkworm industry was destroyed. However, significant steps have been taken in Azerbaijan in recent years to develop silk production. The state funded the restoration of a silkworm station, the creation of additional production facilities, up-to-date equipment and the supply and delivery of mulberry seeds and cocoon seeds to producers.

The annual production of cocoons is expected to rise to 6,000 tons by 2025, ensuring an annual production of up to 600 tons of raw silk. Azeripek LLC is the only silk enterprise in the country and purchases raw cocoons at 4 manat (\$2.3) per kilogram from silk farmers, and the state pays them subsidies worth 5 manat (\$2.9) for the cocoon production. At present, the process of supply and primary processing of silkworm cocoons is being carried out in 40 regions of the country. This network creates the opportunity for rural inhabitants to generate additional income. The Azerbaijan Sericulture Research Institute in Gandja has six laboratories and maintains 43 ha of mulberry plantations. In 2015 1.7 million and in 2019 1.793 million mulberry trees were planted in the country. Azerbaijan may become the biggest silk producer in the MENA region¹⁵. The possible linkages and collaboration between Azerbaijan and Georgia would be experience and knowledge/skills exchange as the governmental as the farmers levels.

¹⁵ Azeripek.com