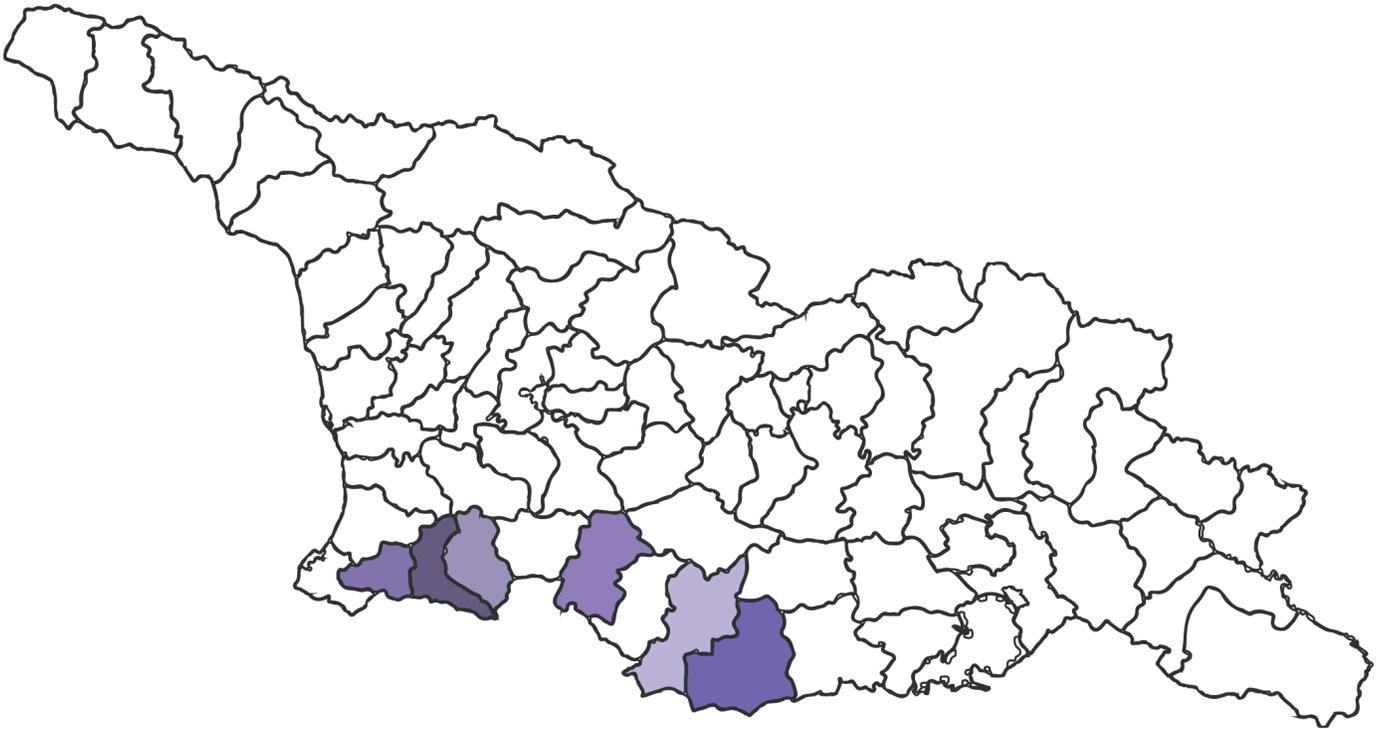




BEEKEEPING VALUE CHAINS IN KEDA, SHUAKHEVI, KHULO, AND AKHALTSIKHE, AKHALKALAKI, NINOTSMINDA MUNICIPALITIES

USAID UNITY THROUGH
DIVERSITY PROGRAM
2023





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1. Introduction

The USAID Unity Through Diversity Program is a five-year program implemented by UNA-Georgia. This initiative, led by USAID, aims to be a hub for integrating ethnic and religious minorities into various aspects of Georgian society, including social, political, and economic spheres. As a subcontractor of UNA-Georgia, PMCG contributes to the expansion and strengthening of the socio-economic connections between the majority and minority communities. Their overall objective is to facilitate the establishment of mutually beneficial business relationships between these groups.

One of the components of the project is to conduct value chain assessments in target ethnic and religious minority municipalities to provide recommendations for the Unity Through Diversity Program for increasing the integration of ethnic minorities in the value chain and integrating the regional value chain in the national or international value chains.

Among the minority municipalities, Beekeeping value chains in Keda, Shuakhevi, and Khulo municipalities of Adjara; and Akhaltsikhe, Akhalkalaki, and Ninotsminda minority municipalities of Samtskhe-Javakheti were selected as the value chains with high development potential in correspondence of the project objectives. The analysis of the selected beekeeping value chain in Adjara and Samtskhe-Javakheti aims to identify gaps in each stage of production and proposes recommendations to meet the market's demand for a high-quality product, as well as identifying business opportunities for religious and ethnic minority municipalities and solutions for increasing the level integration of municipal value chains into national value chains.

In summary, the report is divided into the following sections to provide a comprehensive analysis of the beekeeping value chain in selected Adjara and Samtskhe-Javakheti municipalities.

- Methodology: overviewing the quantitative and qualitative analysis methods used within the research of beekeeping value chain in target municipalities.
- Sector Overview in Georgia: describing the main findings of desk research on a national and regional level, mainly through an overview of key statistics.
- Value Chain Actors: provides a mapping of value chain actors, their descriptions, and a detailed overview of the value chain process, including primary production, storage and processing, packaging, transportation, and sales. In addition to value chain actors, this section also provides a description and overview of external stakeholders.
- SWOT analysis: describing the strengths, weaknesses, opportunities, and threats of the beekeeping value chain in target municipalities.
- Recommendations: provides recommendations for the program for the development of the value chain, with a major focus on the potential of integrating the ethnic minorities in the value chain, as well as the potential of integrating the regional value chain in the national or international value chains.

2. Methodology

For the beekeeping value chain analysis in selected Adjara and Samtskhe-Javakheti municipalities, the research utilized both quantitative and qualitative analysis methods.

Notably, prior to the value chain analysis, the agricultural economic sectors were assessed in target municipalities in Georgia for their competitiveness and their potential for integrating ethnic minorities, as well as their potential of integrating into the national and international value chains. For the assessment and comparison of agricultural value chains, the indicators such as concentration of agricultural products, import substitution potential, and warehouse accessibility were analyzed and scored. The results of this first stage of prioritization scoring, additional extensive desk research, and validation workshops were also organized to ensure that the selected products had high competitiveness potential, systemic impact (through job creation, development of potential linkages with national supply chains and potential for integrating ethnic minorities in the VC).

Through this analysis, the beekeeping value chain in selected Adjara and Samtskhe-Javakheti municipalities was identified as a priority economic sector with high development and incorporation within the national value chain potential. In particular, such target municipalities include Keda, Shuakhevi, and Khulo municipalities in Adjara; and Akhaltsikhe, Akhalkalaki, and Ninotsminda municipalities in Samtskhe-Javakheti¹. A detailed overview of beekeeping value chains in selected Adjara and Samtskhe-Javakheti municipalities is provided in the following sub-sections.

2.1. Desk Research

The desk research was conducted to provide the sector overview at national and regional levels. The statistical and qualitative information used during the desk research was sourced from:

- The Statistical Business Register of the National Statistics Office of Georgia (Geostat) (the number of registered businesses under the beekeeping sector)
- The Agriculture Statistics of the National Statistics Office of Georgia (beehives by regions, honey production by regions, honey production by the type of producer)
- The External Trade Portal of the National Statistics Office of Georgia (export and import values/volumes by countries)
- Rural Development Agency (statistics on RDA beneficiaries)
- Enterprise Georgia (statistics on beneficiaries of Enterprise Georgia)
- and different open sources (such as websites and web pages of Georgian Beekeepers Union²).

At this stage of the analysis, the main insights regarding the beekeeping sector were provided. This was accomplished through an overview of national and regional statistics and thorough online desk research, the results of which are provided in section 3 of the report.

2.2. Field Research

¹ Please, note that Akhaltsikhe, Akhalkalaki, and Ninotsminda municipalities were selected among all municipalities of Samtskhe-Javakheti due to the high concentration of ethnic minorities.

² <http://honeyofgeorgia.com/>

Following the desk research, a questionnaire was developed to better understand the existing situation, challenges, and opportunities of the beekeeping sector in target areas. The questionnaire included questions on current production, production plans, detailed honey production process, sales and distribution of beekeeping products, sales prices, costs of production, diseases, financing, labor force, and infrastructure. In addition to that, the questionnaire also covered general questions regarding the strengths, weaknesses, challenges, and opportunities of the beekeeping sector in target municipalities.

The questionnaire was diversity sensitive and included questions capturing differences and relations, division of labor and roles, practical needs of diverse groups (religious minorities, women, youth), access, control, and benefit of resources. Respondents were selected carefully to encompass a wide geographical range of honey producers and ensure their diversity. The following table summarizes the types of local representatives interviewed within the analysis.

Table 1: List of conducted interviews with local representatives

Municipality	Number of conducted interviews
Keda Municipality – Adjara	5
Shuakhevi Municipality – Adjara	3
Khulo Municipality – Adjara	3
Akhaltikhe Municipality – Samtskhe-Javakheti	3
Akhalkalaki Municipality – Samtskhe-Javakheti	2
Ninotsminda Municipality – Samtskhe-Javakheti	1
Total	15

**Note that some of the listed interviews were conducted with more than one beekeeper simultaneously*

Based on the collected quantitative data, the report maps the beekeeping value chain actors, describing each of them. In addition to that, the production process is analyzed in detail, followed by the storage, processing, packaging, transportation, and sales stages of the value chain. The report also overviews external stakeholders involved in the value chain, including state institutions, sectoral associations, VET colleges, financial institutions, laboratories, etc.

Apart from that, the report also includes the analysis of strengths, weaknesses, opportunities, and threats (SWOT Analysis) of the beekeeping value chain in target municipalities. This section is followed by the conclusive recommendations section of the report, which includes recommendations for the development of the value chain, with a focus on integrating minorities into the VC and the potential of integrating the regional value chain into the national value chain.

2.3. Research Limitations

The given study has several limitations:

- There is an agricultural statistical information gap at the municipality and community level in Georgia.
- Beekeepers in Georgia mainly operate without official registration. Therefore, the official statistics do not fully depict the number of honey producers in Georgia.

3. Sector overview in Georgia

Georgian forests' biodiversity of flora (including the existence of endemic plants), several subtropical climate zones, and being home to a unique breed of Caucasian grey mountain honeybee all make for ideal conditions and great potential to produce mono-floral and poly-floral honey. Furthermore, the variety of honey in Georgia is also diverse, with the following eight types all produced there: Chestnut, Alpine, Blossom, Acacia, Linden, Solidago, Matrobela (toxic honey), and Jara wild honey³.

Currently, most of the beekeepers in Georgia operate as family holdings without official registration. According to the Georgian Beekeepers Union, there are estimated 14,000 beekeepers operating in Georgia. Meanwhile, according to Business Register Statistics of Georgia⁴, 109 active business entities are operating under the beekeeping sector in Georgia. The majority of them are registered as individual entrepreneurs (73 entities - 67%), followed by 27 LLCs (25%), 8 cooperatives - 7% (where several individual beekeepers are united under one business entity), and one non-profit (non-commercial) legal entity (Georgian Beekeepers Union). Most of those business entities are registered in Tbilisi, Imereti, Kakheti, and Samtskhe-Javakheti regions.

The abovementioned trend of non-registered honey producers is strengthened by the national statistics as well. According to the National Statistics Office of Georgia, almost all production of honey comes from family holdings, as between 2016 and 2022, agricultural enterprises, on average, covered just 6% of total production.

Throughout the past 5 years (2018-2022), the average honey production in Georgia was equal to 2.3 thousand tons per year. Throughout this period, a significant decline (-17%) in production is visible in 2021, when the production of honey declined from 2.4 thousand tons (2020) to 2.0 thousand tons. This could be attributed to the spread of Varroidae (a new species of mites) and their development of immunity against existing drugs. By the spring of 2021, because of the large-scale elimination of bees, the sector had suffered a year-on-year loss of approximately GEL 5 million⁵. This issue was consequently addressed through a combination of mechanisms deployed by public and private entities, such as developing the skills of beekeepers, identification of infected beehives, laboratory analyses, and the introduction of new methods to repel honeybee mites. However, the issue was not fully resolved as the honey production in 2022 stayed at 2.0 thousand tons and did not manage to return to the level of previous years (2.4-2.5 thousand tons). However, it must also be noted that despite the 7% decline in the number of beehives in Georgia in 2022, the level of production was not affected, indicating an increase in the productivity of beehives.

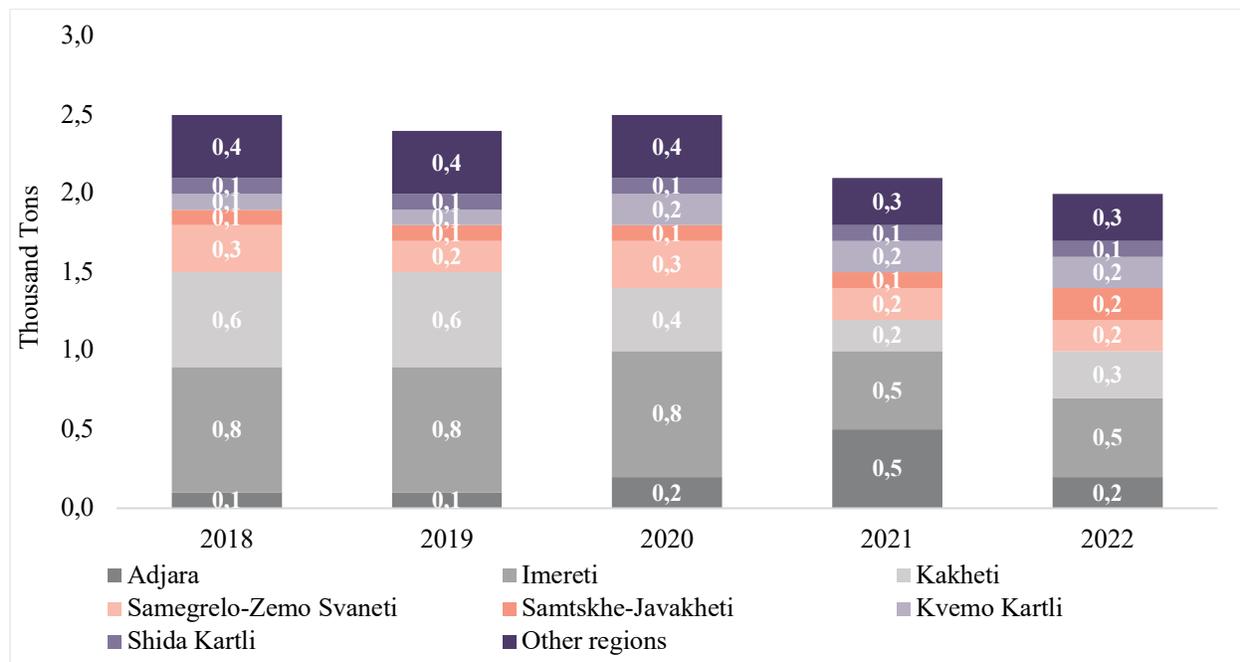
Further analysis of production by regions shows that, throughout 2018-2022, the top honey-producing regions in Georgia were Imereti, Kakheti, and Samegrelo-Zemo Svaneti. However, the share of Kakheti in total honey production has been declining since 2018, while the share of Imereti was increasing up until 2021. In 2021, Adjara became one of the top three honey-producing regions, followed by a decline in production in 2022. Notably, the share of Samtskhe-Javakheti was stable throughout the 2018-2021 years. However, some notable increases can be noticed in 2022.

³ For further information regarding the Jara honey in Georgia, please refer to the following website of the Jara Beekeepers Association - <https://jarahoney.com/>

⁴ Extracted from <http://br.geostat.ge/>; as of 20.06.2023.

⁵ [What causes the decline in number of beehives in Georgia - 2021](#)

Graph 1: Honey production by regions (2018-2022)



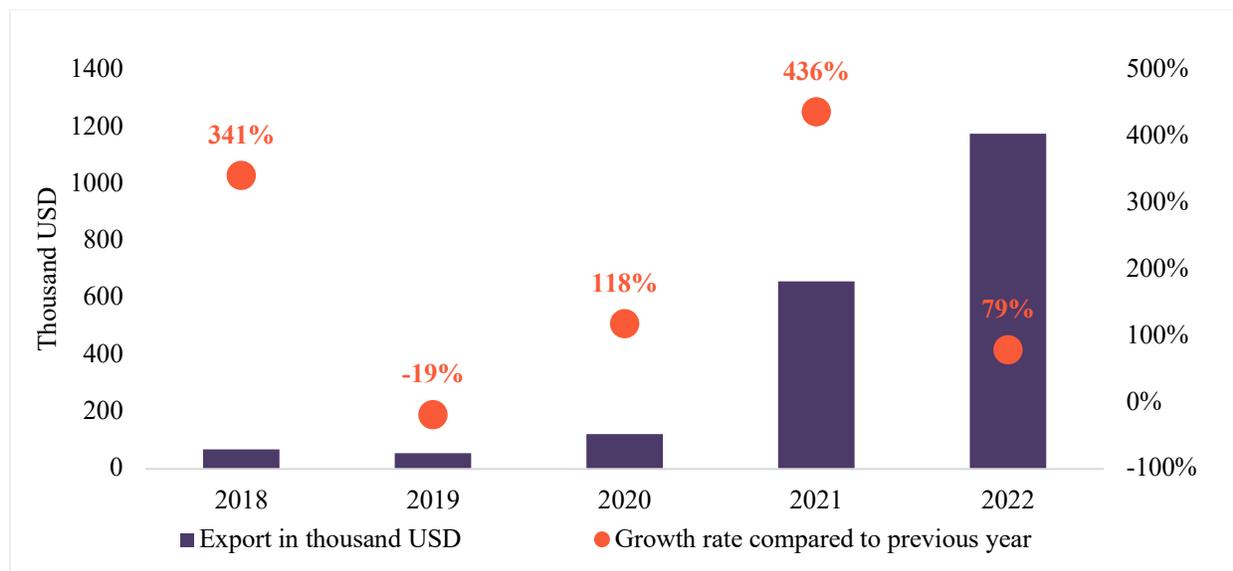
Source: National Statistics Office of Georgia

Significant positive dynamics are observable in the international trade of Honey in Georgia. In particular, since 2019, its export value, as well as the export volume of honey, has been steadily increasing. In 2022, compared to 2021, the export value increased by 79%, and the export volume rose by 49%, which indicates that the price of exported honey has increased significantly. This can be attributed to the improvement of honey quality in the country and the popularization of Georgian honey in international markets, especially in the EU⁶. It must also be mentioned that the international demand for Georgian honey has risen markedly, resulting in honey stocks running out and Georgian exporters being unable to export until May 2023⁷.

⁶ Despite the opening EU market for exporting Georgian honey in 2016, until the latest years (2021-2023), Georgian honey was not exported to the EU market in high amounts due to the quality regulations of product from the EU and the inability of Georgian beekeeping companies [to test their products to verify its quality and lack of education in the production of bio honey.](#)

⁷ [Georgian honey will not be exported until May 2023 | BM.GE](#)

Graph 2: Georgian export value of natural honey and its growth rate (2018-2022)



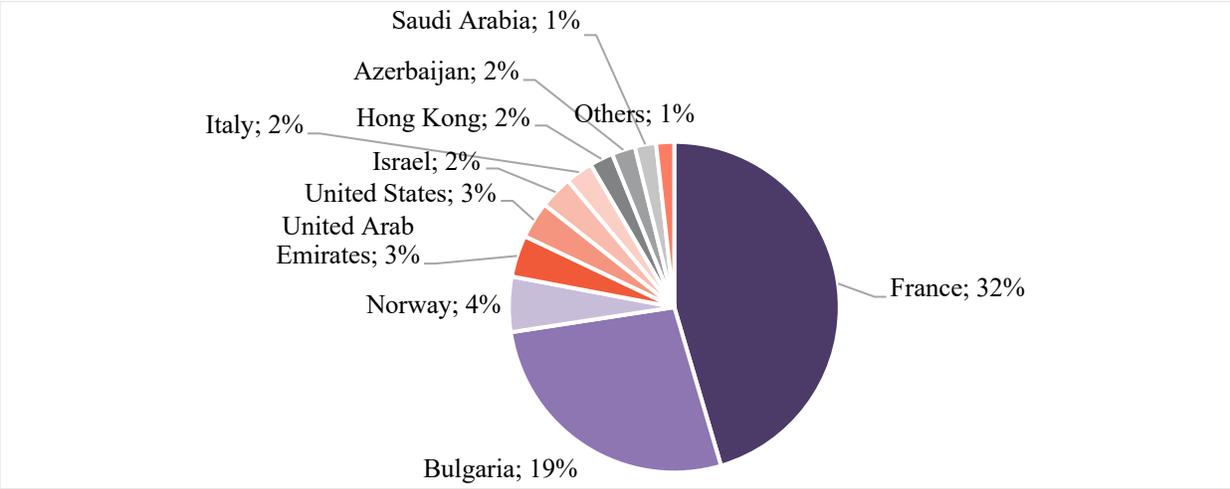
Source: National Statistics Office of Georgia

Due to the development of trade relations with the EU and the development of the Georgian honey sector towards the production of high-quality honey, the trade structure has been modified significantly throughout the last few years. In particular, European countries were among the top exporting countries for 2018-2022 years despite the active and high volume of trade occurring only in 2021 and 2022 years.

Export value to EU countries increased by 75%, and volume rose by 48% in 2022 compared to 2021. For CIS countries, value, as well as volume, declined by 68% and 93%. It is important to note that the export value to EU countries was approximately 86 times greater than to CIS countries. Notably, the demand from EU countries is expected to increase further, especially for light-colored Acacia honey⁸.

Graph 3: Exports value by countries (2018-2022)

⁸ [The demand on Acacia honey from EU is higher than the supply | BM.GE](#)



Source: National Statistics Office of Georgia

France had the highest share in terms of export value during the period of 2018-2022 (at 32%), with Bulgaria coming in second at 19% and Norway third at 4%. Notably, the majority of France’s and Bulgaria’s trade occurred in 2021-2022, while Norway’s trade activity was only in 2022 during the observed period.

Exports to France were recorded in 2019, 2021, and 2022. In 2022, exports to France showed a rapid increase. In particular, export value increased by 80% compared to 2021, albeit compared to 2019, the export of natural honey to France was minimal. To Bulgaria, exports started in 2020, and in 2022 the export value grew by 72% compared to 2021 and increased 92-fold compared to 2020.

Finally, it must also be noted that throughout the past years, the beekeeping sector has received some support from the Government of Georgia with different projects. In particular, throughout the 2014-2022 period, beekeepers have received some financial support from government entities, namely Enterprise Georgia (EG) and the Rural Development Agency (RDA). Under EG’s micro credit program, 29 businesses operating in Guria, Mtskheta-Mtianeti, and Kakheti received a total of GEL 232,100. Meanwhile, the RDA financing⁹ to the sector amounted to GEL 730,000 and benefited 40 businesses, mainly from Imereti, Kakheti, Samtskhe-Javakheti, and Racha-Lechkhumi and Kvemo Svaneti regions.

To conclude, the recent developments in honey production and sales in Georgia, and expectations for the near future, reveal its immense potential. However, as mentioned above, some major issues must be considered to fulfill the sector's further development.

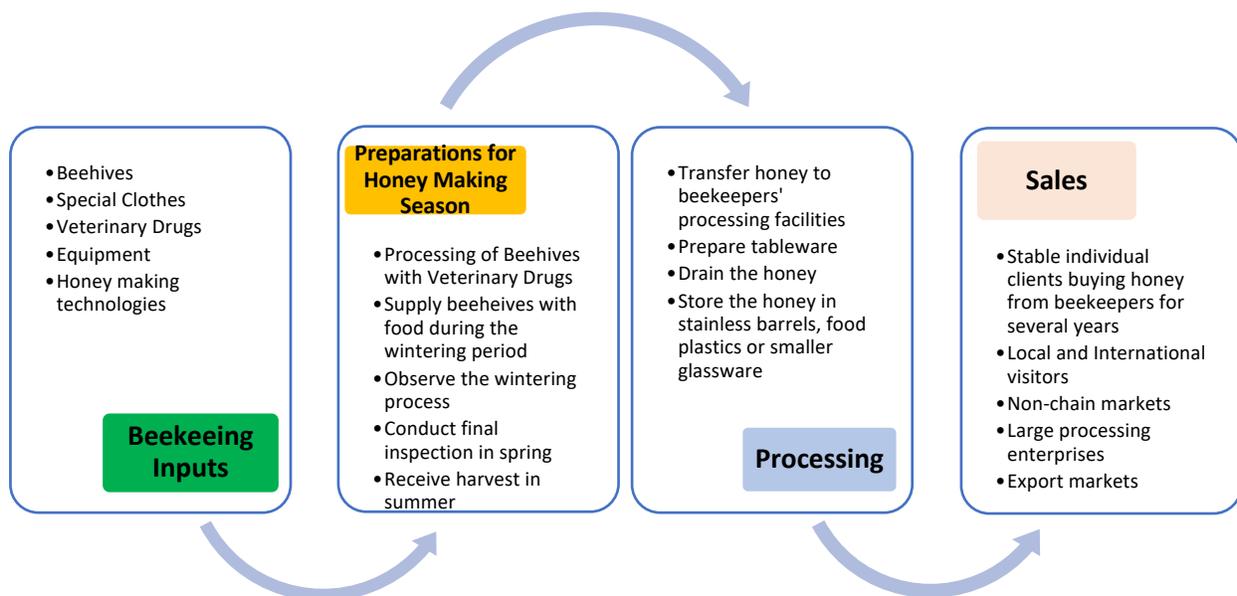
⁹ Through the Preferential Agrocredit project, the Agriculture Modernization, Market Access and Resilience (AMMAR) project, and a state program supporting cooperatives.

4. Value Chain Actors

Beekeepers in selected municipalities of Adjara and Samtskhe-Javakheti are engaged in diversified agricultural activities. Some of them pursue cattle breeding, wine making, fruit growing, and fishing. Several beekeepers are also employed by public and private organizations and regularly receive salaries. For most of the interviewed individuals, beekeeping represents a traditional family business passed through generations.

Activities and items of the honey production process are described in the scheme below:

Scheme 1: Honey Production Process



4.1. Inputs and Input Suppliers

Basic inputs used by the beekeepers in selected municipalities of Adjara and Samtskhe-Javakheti Regions are presented in the table below:

Table 2: Beekeeping Inputs

Basic Inputs	Other Inputs
<input type="checkbox"/> Beehives	<input type="checkbox"/> Knifes
<input type="checkbox"/> Veterinary Drugs	<input type="checkbox"/> Special Broom
<input type="checkbox"/> Honey Extractor	<input type="checkbox"/> Barrels
<input type="checkbox"/> Pine	<input type="checkbox"/> Glass tableware
<input type="checkbox"/> Bellow (saberveli, qorugi)	<input type="checkbox"/> Wood Material for beehive
<input type="checkbox"/> Special Clothes	<input type="checkbox"/> Paint
<input type="checkbox"/> Masks	<input type="checkbox"/> Handles
<input type="checkbox"/> Rus	<input type="checkbox"/> Grid
	<input type="checkbox"/> Specialized AWD Vehicles

Input suppliers in selected municipalities of Adjara are specialized shops located in Batumi, Keda, and Khulo. However, some beekeepers visit Tbilisi and neighboring Turkey to purchase beekeeping inventory and materials. The main reason for visiting Tbilisi is a larger assortment of respective inventory and beekeeping products, while specialized shops in Turkey are attractive because of the lower prices than in Adjara and Tbilisi. Some beekeepers state that Turkey produces a wider variety of beekeeping inventory, and Adjarian beekeepers observe them at various fairs organized in Turkey. In most cases, beekeepers purchase veterinary drugs in the same shops that sell other beekeeping inventory. However, some of the beekeepers mentioned that they had negative experiences regarding the purchased veterinary drugs, as far as some of them did not have the expected effect, while some were falsified. Also, as in the case of other inventory, veterinary drugs are substantially cheaper in Turkey.

Most of the interviewed beekeepers have long-time cooperation with specialized beekeeping shops located in Batumi. They receive recommendations from shop owners on various inventory and veterinary medicines for the treatment of various diseases. These shops located in Batumi also serve as places for spreading information on new treatment methods for bee diseases, new medicines, innovations in making beehives and novelties regarding other inventories and equipment used in beekeeping activities. One interviewed beekeeper prefers to buy inputs and inventory in Tbilisi, as he frequently visits the capital, and the variety of products is wider in Tbilisi shops. According to him, in Adjara, beekeepers mostly find inputs produced in Turkey, while Tbilisi shops also offer products made in other countries.

Some beekeepers make beehives themselves and purchase respective inputs locally. According to the beekeeper from Khulo, the approximate price for beehive inputs (respective wood material, paint, handles, grid) may reach GEL 200, while the fee for beehive makers is GEL 40 per beehive.

In Khelvachauri, a wax printing enterprise operates and serves beekeepers from various municipalities. Similar enterprise also operates in Guria, Vakijvari and some Adjarian beekeepers also use their services. Some beekeepers state that the quality of Vakijvari pine was better than that of Khelvachauri.

Interviewed beekeepers in Samtskhe-Javakheti mentioned that there are veterinary pharmacies in Akhaltsikhe, Aspindza, and Ninotsminda, and beekeepers mainly buy respective drugs there. One beekeeper buys beehives in a specialized shop “Putkara”, located in Tbilisi.

Some of the interviewed beekeepers in selected municipalities of Adjara need the following inventory for their apiaries:

- ✓ Sharpening knife
- ✓ Jumpsuits
- ✓ Face Masks
- ✓ Packing Machine for veterinary drugs
- ✓ Stainless steel for honey storage
- ✓ Chow collector
- ✓ Poison pick-up
- ✓ Large electric honey extractor
- ✓ Electric sharpener
- ✓ Front shutters of beehives
- ✓ Wax printed machine

Interviewed beekeepers from Samtskhe-Javakheti stated the need for the following inventory:

- ✓ Thermal plastic foam beehives for the production of mother bees
- ✓ Pomp rubber tube, needed for completing the factory line of honey and acquiring HACCP standard

Some beekeepers also need all-wheel drive cars to ensure bee nomadism. According to them, the ownership of specialized vehicles will enable them to increase productivity and receive honey harvest at least twice a year.

4.2. Labor Force

Beekeeping is a family business, and respective activities in selected municipalities of Adjara and Samtskhe-Javakheti regions are mainly conducted by the members of the families. However, most of the work is done by an individual beekeeper – the owner of the apiary. Other family members assist beekeepers in the draining process, sales activities, transportation of honey to sellers, and bee nomadism. Women have mostly supportive roles in beekeeping processes. Interviewed woman beekeeper from Keda municipality mentioned that she and her husband are engaged in beekeeping, and she is typically occupied by marketing and sales, mostly having communication with tourists.

There are cases when beekeepers hire individuals. In Keda municipality, one beekeeper hires employees to drain the honey. Daily payment for such employment equals GEL 50. In Samtskhe-Javakheti Region, one beekeeper that normally works alone also needs the hiring of employees for assistance in the draining process. Normally he hires 4-5 men for one week and pays GEL 70 per day. This cooperation lasts for years, and sometimes employees take honey instead of money as payment.

In Samtskhe-Javakheti, an interviewed beekeeper from Ninotsminda mainly needs the assistance of family members for the transportation of beehives from Ninotsminda to Vardzia in Autumn and back in summer. Normally, 4 family members are engaged in transportation activities.

It is worth noting that in most cases, beekeepers are male, while family member women are actively helping them, especially in harvesting and sales. Also, most beekeepers are not young. While there are some instances of youth involved, these cases are relatively rare.

The involvement of ethnic and religious minorities in the sector does not have any significant barriers, especially in selected municipalities of Adjara. However, in the selected municipalities of Samtskhe-Javakheti, non-Georgian-speaking minorities are mostly not integrated into the Value Chain, and as most beekeepers sell their products via word of mouth, their clients are also mostly non-Georgian-speaking minorities. In Keda municipality, VET college “Black Sea” offers programs on beekeeping. There are other training opportunities offered by local experts or invited professionals from Tbilisi and other regions of Georgia. One beekeeper from Keda municipality has attended 6 months course conducted by a local beekeeping expert. He underlined the usefulness of the course for practical beekeeping work. A woman beekeeper from Keda municipality mentioned professional development courses organized by Local Women Organization. These 3-4 months of training conducted by invited experts were very useful for the participants. Training is also provided by the Chamber of Commerce and Industry of Adjara, the Beekeeping Business Association, and the Ministry of Environment and Agriculture.

One interviewed beekeeper from Adjara stressed that beekeeping training courses were recently scheduled during the active beekeeping season when beekeepers are busy. Hence, it would be sensible to organize

beekeeping training during winter. In addition, another interviewed beekeeper mentioned that knowledge and experience in veterinary medicines and beekeeping equipment are critically needed, while traditional knowledge is mostly sufficient.

4.3. Primary Production, Storage, and Processing

The main product produced by the beekeepers in selected municipalities of Adjara and Samtskhe-Javakheti is honey. In Adjara, chestnut and lime honey, or their mix, dominates. Also, the niche product is Jara honey, which is produced in the wild nature environment. The process of honey production in the processing enterprise is illustrated in Annex 1.

Some beekeepers also produce:

- Wax
- Propolis
- Homogenate of male bee¹⁰
- Bee milk
- Honey vodka

The main beekeeping product in Samtskhe-Javakheti Region is honey. Mainly alpine honey and Meskhetian honey are produced in the region. Ninotsminda alpine honey received a platinum award at London International Honey Awards 2023. Some beekeepers also produce:

- Bee milk
- Mother Bees
- Propolis
- Wax
- Honey Vodka
- Pollen
- Chow
- Bee Venom

Interviewed beekeepers in both regions stated that commercialization of the above-listed bee products except honey is limited. They are mainly used for family consumption or as gifts. Only one beekeeper from Akhaltsikhe municipality's village Tskruti stated that he specializes in growing mother bees and sells around 1000 of them annually.

In autumn, the beekeepers process the beehives with veterinary drugs against varroa disease. Afterward, they inspect the beehives to be sure that the varroa risks are eliminated and ensure that beehives are ready for wintering. The beekeepers in selected municipalities of Adjara and Samtskhe-Javakheti give bee food to their beehives in January. At the end of February, they clean the beehives. During February-March, the beehives are repeatedly processed with veterinary drugs against varroa disease. To minimize varroa risks, some beekeepers isolate mother bees (from October to February) so they stop laying eggs. If the weather is bad at the beginning of spring, additional food is given to the beehives. In spring, the beekeepers observe how the wintering went on. Normally, the spring season is mostly used for the in-depth revision of beehives. In spring, because of bee reproduction, the bee families are separated: it may happen naturally or artificially.

¹⁰ Used for medical purposes.

The honey in selected Adjara municipalities is normally drained once a year, beginning from the 15th of July and lasting until the end of August. The draining process starts with taking the honey from the beehives, its placement in new boxes, transfer to the drain facilities, drain process, and transfer of empty frames to the beehives. The draining process goes through the honeycomb. The drained honey may be stored in 200-liter stainless barrels or food plastics. Some beekeepers store the honey in smaller - 5-, 10- or 20-liter glassware.

The process of breeding a mother bee lasts one month and has the following components:

- Closure of space for mother bees
- Exit of mother bees
- Fertilization
- Laying eggs

Each of these processes lasts approximately one week.

In addition, the beehives in Khulo municipality should be warmed. Bees may cool the beehives themselves if required. Beekeepers in Keda state that the ventilation of beehives is critical. Without proper ventilation, the beehives will be dumped, and the risks of diseases will increase. Hence the beehives should have respective holes. If bees feel cold in winter, they will close the holes with propolis and open them in spring. One interviewed beekeeper from Khulo stated that the design of the beehive should allow ventilation – aeration should be ensured from the bottom and roof of the beehive. According to him, the dump represents one of the most dangerous enemies of the bees, thus, proper ventilation of beehives is required. Also, the width of the beehive should reach 4 centimeters in order to avoid the dump. However, beekeepers in Shuakhevi municipality state that they rarely need ventilation of beehives due to the mountainous and dry climate.

One beekeeper from Khulo municipality transports beehives to Batumi and keeps them there from November until the spring. The reason is the harsh winter conditions in Khulo. He practices the processing of beehives against varroa disease in late autumn and spring. At the end of May, the beekeeper brings beehives to Keda to produce chestnut honey. Afterward, the beehives are transported to Khulo to exploit opportunities for clover and lime blossoming. On average, this beekeeper changes the mother bee once in two years when its productivity diminishes.

Another beekeeper from Khulo transfers beehives to Ozurgeti - Guria Region. This process normally takes place in September, and beehives stay there until the summer of the next year. In Ozurgeti, the beekeeper receives good quality honey, mainly from Acacia. Afterward, in summer, he transfers the beehives to Beshumi and receives another harvest there.

Another beekeeper from Khulo practiced the transfer of beehives to Tsalka, where he experienced more productivity due to the difference in climate conditions between Khulo and Tsalka. However, this transfer makes sense when one has a critical quantity of beehives, as for small quantities, the expenditures are higher.

Other interviewed beekeepers in Adjara do not practice bee nomadism. Some of them have a small number of bee families, and nomadism does not make sense, some do not have transportation means to transfer beehives to their respective destinations. According to one beekeeper, nomadism is necessary for the

improvement of productivity. Normally, bee families located in one destination are less productive in comparison to those that are transferred to two or more destinations during the honey-making season.

In Samtskhe-Javakheti Region, one interviewed beekeeper from Ninotsminda municipality transfers beehives to Vardzia in October, as winter is harsh in Ninotsminda, and brings them back to Ninotsminda in June. One respondent in Akhalkalaki mentioned that he does not practice nomadism of bees as he lives in a productive mountainous region, and it's not necessary. Another respondent in Akhalkalaki was practicing nomadism some time ago, but now, due to lack of time, has stopped.

Beekeeping cooperative in Akhaltsikhe has acquired an agroecological mark from the association "Elkana". It is also in the final stage of acquiring HACCP standards. This represents a significant step forward towards acquiring bio certification. The cooperative is actively working on submitting bio certification requests and plans to apply for the respective state support scheme.

Interviewed beekeepers in selected Adjara and Samtskhe-Javakheti municipalities store extracted honey and other products in the premises located in their households. These are normally the places where the draining process is undertaken. The storage premise may be in the house or in a separate building located on the land plot of the beekeeper.

At the storage premises, the honey is normally stored in 200-liter stainless barrels, food plastics, or smaller glassware. Some of the beekeepers plan to submit a business plan for building processing and storage facilities to the respective state programs or donor organizations.

The presence of "Agro Keda" processing enterprise in Keda municipality, which represents a factory of "Kakhetian Traditional Winery", is an important factor in the development of the beekeeping and honey production sector. In 2019, as a result of tripartite cooperation between the Jara Beekeepers Association, Mercy Corps, and "Agro Keda", the association collected Jara honey from its members, while "Agro Keda" ensured its packaging and placement on the local and international markets. Mercy Corps financed equipment for the Jara honey producers. This cooperation has been successful, and in 2021, the 1st batch of Jara honey was exported to Japan. In 2022, the volume of export to Japan reached 800 kg. Japanese buyers visited Adjara and observed the production process of Jara honey. "Agro Keda" also purchases other honey varieties from the beekeepers of Adjara.

4.4. Sales

Interviewed beekeepers in selected municipalities of Adjara and Samtskhe-Javakheti mostly sell their products to local and international individuals. They also practice selling in non-branded markets.

Several of the interviewed beekeepers in Adjara sell to a local processing enterprise – "Agro Keda". The processing enterprise ensures laboratory examination of the honey and afterward buys respective quantities from the beekeepers. The purchase price of "Agro Keda" processing enterprise is between GEL 11-12. Some beekeepers from Keda and Khulo cooperate with the enterprise and sell the honey, as far as they cannot sell the whole product to individual buyers at higher prices. "Agro Keda" is also an important buyer of Jara honey.

Important buyers for Adjara and Samtskhe-Javakheti beekeepers are local individuals that represent a "stable buyers" segment. They buy honey year by year, and their primary motivation is the trust in the quality of honey produced in Adjara.

Several of the interviewees from Adjara stressed that they do not cooperate with aggregators, as far as their purchase price is between GEL 6-8, which equals to the costs of honey production. The purchase price of non-branded markets and re-sellers at agrarian markets is between GEL 10-12. At the same time, the beekeepers sell at GEL 20-25 to their stable buyers – individuals. Several beekeepers also mentioned that honey sales were high in the 2000s when it was possible to export to Turkey.

Interviewed beekeepers normally do not practice branding and packaging activities. Honey and Jara honey purchased by the „Agro Keda” in branded and packaged by the enterprise or importers at the destination country. Otherwise, local and international individual buyers, also non-branded markets, purchase unpackaged honey in jars.

Normally, a processing enterprise ensures the transportation of honey to its premises. Local/international individuals mostly buy honey at the premises of beekeepers, and transportation is not needed. Beekeepers use their own or family members’ transportation means for transferring the honey to the non-branded markets located in the municipalities.

One interviewed beekeeper in Keda municipality owns a family hotel and mostly sells the produced honey to visitors. Tourists prefer to buy the honey in the glassware, the volume of which ranges from 200 grams to 1 kilogram. Another beekeeper mentioned that Arab tourists emerge as stable buyers. They are also interested in observing the apiaries.

In general, the selling price per kilogram of honey to individuals in selected municipalities of Adjara and Samtskhe-Javakheti ranges between GEL 20 – 30.

In Adjara, only one interviewed beekeeper practices the realization through agricultural and other fairs organized throughout the country.

A beekeeper from Akhaltsikhe municipality’s village Tskruti, who specializes in selling mother bees, stated that, on average, he sells 20 mother bees a day in the respective season. In addition, the beekeeper experiences an influx of tourists that are interested in the honey-making process and plans to diversify the offer for the visitors. For the diversification of sales, the beekeeper plans the construction of api house, which creates a beehive ecosystem mainly used for medical purposes. This concept also involves a respiratory device enabling to breathe the beehive air.

When asked about the future prospects of the sector, the absolute majority of interviewed beekeepers feel positive. They expect an increase in demand for high-quality honey and plan respective investments for the modernization of their apiaries and processing facilities. This optimism is mainly based on the positive expectations towards the growing tourism industry, the potential for the commercialization of other beekeeping products, and unexploited export potential.

4.5. Challenges

Based on the interviews with beekeepers from selected municipalities of Adjara and Samtskhe-Javakheti, the following challenges are identified:

Tackling Spread and Promoting Treatment of Bee Diseases

- Uncontrolled spread of bee diseases, mainly because of the irresponsible attitude of some beekeepers and uncontrolled nomadism of bees
- Insufficient knowledge among selected beekeepers on discovery and proper treatment of diseases
- Lack of unified attitudes and methods for the treatment of bee diseases
- Lack of knowledge on effective veterinary drugs for the treatment of bee diseases
- Lack of monitoring of the quality and effectiveness of veterinary drugs sold in pharmacies or beekeeping shops
- Resistance of Varroa disease to respective veterinary drugs
- Incineration of agricultural yields against various insects that endangers the lives of bees
- The reluctance of some beekeepers to get rid of beehives that contain diseases
- Some instances of bee and honey poisoning due to herbicides used in potato farming (relevant for selected municipalities of Samtkhe-Javakheti)

Access to Inputs, Services, Information and Resources

- Lack of honey plants, especially in Adjara municipalities
- Lack of financial resources necessary for the modernization of apiaries and upgrade of equipment and technologies
- High prices on veterinary drugs, equipment, and technologies
- High service prices on the laboratory analysis
- Spread of bad quality beehives financed by the state support programs
- Insufficient spread of information on modern equipment and beekeeping technologies
- Use of aluminum barrels for the storage of honey
- Realization of falsified honey in agrarian markets of Adjara

Environment for Beekeeping

- Harsh winter conditions in mountainous areas
- Birds that eat bees (observable in selected municipalities of Adjara)

Marketing and Sales

- Lack of sales and marketing expertise among beekeepers
- Lack of diversification of beekeeping products
- Lack of trust among beekeepers hampers cooperation in various fields, especially in responding to requests for purchasing a high quantity of honey.
- Lack of sufficient quantity to respond to international demand.
- Strict rules of chain supermarkets on the placement of honey and other products in their stores

Other Challenges

- Absence of beehive registration and traceability
- Beekeepers' lack of time for proper management of beekeeper cooperatives.

5. Key Stakeholders

Beekeeping Associations

Jara Beekeeper's Association

The Jara Beekeeper's Association (JBA) was established in 2019. Its goal is to protect the interests of the members, provide respective information, and assist in the bio certification and production process. The JBA has the following goals:

- Maintain the database of Jara beekeepers
- Collection of information on traditional Jara beekeeping and sharing with the members
- Assign Jara quality assurance mark
- Maintain respective quality production standards among the members
- Provide consultations to members
- Raise awareness on Bio certification
- Represent the interests of the members and advocate respective topics
- Participate in local and international festivals, fairs
- Carry out marketing activities for the promotion of Jara honey
- Analyze honey sector development trends and supply respective information to the members of the association

JBA provides respective services to its members. They may receive free-of-charge consultations on making the Jara hives, selection of the location for the apiary, and harvesting of Jara honey. In the area of bio certification, the JBA provides information on the associated procedures and requirements, conducts training, monitors the certification process, and facilitates linkages. The JBA actively supports the development of linkages between Jara beekeepers and aggregators. As a result of this cooperation, Jara honey is being packaged and labeled according to international standards and is sold on local and international markets. For a reasonable fee calculated based on the location of the apiary and the number of Jara hives, JBA members may receive oxalic acid treatment service by vaporizer. The advantage of using this service lies in its efficacy and ease of use.

Currently, 24 Jara beekeepers from Khulo, Keda, Shuakhevi, and Khelvachauri are united in the JBA. 21 members of the JBA are Muslims.

19 JBA members acquired bio certification in 2019. The process was preceded by intensive training. In the same year, around 1 ton of bio honey was collected from the JBA members. 5 more members acquired bio certification in 2020. In 2019, an appropriately trained and equipped group was established in the framework of JBA that specialized in the extraction of honey. Also, a separate group was working on the processing of beehives with sorrel acid. In addition, the JBA ordered the production of Jara beehives and distributed them to the members and other interested beekeepers. According to the chairman of the Association, activities of JBA in the area of supply of veterinary drugs and consultation increased the productivity of beekeepers by 44%.

In 2021, the 1st batch of certified bio Jara honey was exported to Japan. In 2022, 800 kilograms were exported to Japan, which was labeled and packaged in the destination country. Representatives of Japanese trading companies visited Adjara and observed the production of Jara honey. In 2023, the conduction of

labeling and packaging operations is planned in Keda municipality, as far as they are expensive in Japan. It is planned to export 1 ton of Jara honey in 2023.

Currently, the creation of the association's honey-processing enterprise is on the agenda. The chairman of the associations is actively seeking respective land plot and financial resources for the creation of modern enterprise. The enterprise will have separate spaces for the production of bio honey and ordinary honey.

Beekeeping Business Association of Adjara

The Association was established in 2016 under the Chamber of Commerce and Industry of Adjara. Currently, it unites 120 beekeepers. The Association has the following goals:

- Protect the interests of beekeepers at local and international levels
- Analyze trends in the beekeeping and honey sector
- Provide consultations to members and other interested entrepreneurs
- Organize training courses and support capacity building of the members
- Monitor legislation regulating the beekeeping and honey sector and update members on respective developments
- Establish connections and cooperation with similar associations in foreign states
- Organization of the annual honey festival in Adjara, conduction of marketing activities, and improvement of visibility
- Establish connections with potential buyers of beekeeping products
- Attraction of new members to the association

Beekeeper's Club of Samtskhe-Javakheti

The club represents an informal unity of beekeepers, mainly used for exchanging information and experience. It unites around 70 beekeepers from the region that receive updated information via messenger chat and can ask for consultations from fellow beekeepers. A French NGO assists the club by providing office space for the meetings. The club members also discuss ideas for collective actions, such as the development of a vision for the beekeeping sector development in the region, the development of common storage facilities, etc. Further development of the club needs positive cooperation experience and demonstration of benefits of collective attitudes and actions.

Georgian Beekeepers Union

Georgian Beekeepers Union, founded in 2018, represents an umbrella organization comprising 10 associations and 3 companies. Throughout Georgia, there are 4 thousand beekeepers under the umbrella of the Union.

The Union has the following goals:

- Support the development of the beekeeping sector through the consolidation of sector associations/unions in Georgia
- Promotion of Georgian beekeeping products
- Cooperation with VET institutions and local and international laboratories
- Creation and development of beekeepers' database

- Study and analyze beekeeping challenges and advocate for respective solutions
- Support the export of Georgian honey
- Support the conduction of research, educational and informational programs
- Support young and female beekeepers

Members of the Union provide the following services to beekeepers:

- ✓ Consultations maintenance and breeding of beehives, beekeeping inventory, standards, branding, labeling
- ✓ Veterinary consultations
- ✓ Training courses and education

VET Institutions

Black Sea College

LEPL Black Sea College represents a multidisciplinary vocational education establishment. Its main office and educational infrastructure are located in Batumi. Among other subjects, the college's branch in Keda municipality offers a professional education program in beekeeping. The dual program aims to equip beekeepers with respective knowledge, skills, and competencies to enable the deployment of knowledge in practice. The duration of the program is two years. It aims to enable participants to manage the beekeeping business, manage bee diseases, produce beehives, and produce bee glue, wax, pollen, bee milk, and poison. The graduates should be able to manage their beekeeping businesses.

Public Institutions

Laboratory of the Ministry of Agriculture

The state laboratory of Agriculture is a legal entity of public law under the Ministry of Environment and Agriculture of Georgia. It examines food and raw materials of animal and plant origin, animal feed and raw materials, non-alcoholic beverages, and drinking water. The laboratory determines quality and feed ability. It also participates in disease control and quarantine measures. The laboratory gradually adopted and improved honey testing methods and standards. Currently, it may inspect 12 parameters of honey, including the containment of antibiotics or pesticides.

Rural Development Agency

Rural development agency operates under the Ministry of Environment and Agriculture and implements private sector support programs for agriculture and rural development. Support of the beekeeping sector has been the priority of the Agency since its creation, and it has supported private entrepreneurs as well as beekeeping cooperatives throughout Georgia.

The Agency manages the following ongoing programs relevant for the beekeeping sector:

- State program for support of beekeeping agricultural cooperatives
- Program for the promotion of entrepreneurial activity in mountainous regions
- Bioproduction promotion program
- Preferential agro credit project

6. SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Biodiversity of Georgian forests ▪ Beekeeping traditions ▪ Diverse variety of honey ▪ „Jara“ honey, that represents rare top quality organic wild honey and follows an ancient tradition of domesticating wild bees ▪ Ninotsminda Alpine Honey ▪ Respective knowledge and experience ▪ High-quality honey produced by experienced beekeepers ▪ Good conditions and environment for the production of high-quality honey ▪ Positive export dynamics ▪ Export experience of Jara honey to Japan ▪ State and international donor support programs for the beekeeping sector ▪ Existence of a processing enterprise in Adjara ▪ Growing tourism sector and associated potential to increase sales ▪ Existence of beekeeping associations in Adjara 	<ul style="list-style-type: none"> ▪ Lack of knowledge and experience in bee disease treatments ▪ High prices on honey production inputs ▪ Lack of knowledge of bio certification and its benefits ▪ Lack of financial resources for the expansion of production, technological modernization, and building of new facilities ▪ Irresponsible attitude of beekeepers and associated risks of spreading diseases ▪ Harsh winter conditions in Khulo municipality ▪ Low purchasing prices from aggregators and processing enterprises ▪ Lack of honey plants ▪ Lack of knowledge of the procedures for obtaining bio certification and its benefits ▪ Lack of quantity of high-quality honey to meet international demand ▪ Absence of laboratory services in Adjara and Samstkhe-Javakheti
Opportunities	Threats
<ul style="list-style-type: none"> ▪ Technological modernization ▪ Transfer of knowledge and modern beekeeping techniques ▪ Penetration to export markets ▪ Opening of the Turkey market for Georgian honey ▪ Branding and Packaging of Honey ▪ Increase of production of other bee products ▪ Further development of the agrotourism sector, increased number of visitors, and improved sales ▪ Development of apitourism ▪ Active cultivation of honey plants ▪ Engagement of youth in the beekeeping business ▪ Improved marketing of beekeeping products ▪ Participation in international fairs and exhibitions ▪ Continuous government and donor support to the beekeeping sector ▪ Increasing local and international demand for honey 	<ul style="list-style-type: none"> ▪ Uncontrolled bee nomadism ▪ Spread of new bee diseases ▪ Incineration of agricultural crops ▪ Varroa disease ▪ Spread of American Foulbrood ▪ Migration of population to the cities ▪ Climate change, global warming ▪ Continued incineration of agricultural yields against various insects

7. Recommendations

Further Strengthening Existing Beekeeping Associations – Strong associations will support the proper deployment of scarce resources of beekeepers for further development of the sector. The support may be directed towards the development of new services to the members, elaboration of analytical and informational periodicals, the transfer of knowledge and experience from similar successful associations of EU member states.

Facilitate Linkages between Beekeeping and Tourism Sectors – Linkages between two sectors already exist and have the potential for intensification. Support measures may include marketing honey produced in Adjara and Samtskhe-Javakheti to hotels, restaurants, and confectionaries, organization of honey fairs in active tourism seasons, elaboration of tours for visiting apiaries and observing honey making process, the assistance of selected beekeepers in the development of api houses for the diversification of activities and sales and attraction of tourists.

Support Beekeepers in Honey Branding and Packaging – The support should be directed to selected beekeepers that are committed and ready to undertake branding and packaging activities. The process may include hiring of branding specialist, intensive cooperation with beekeepers and identifying design, and materials for packaging.

Implement Targeted Marketing Campaign – With the engagement of respective marketing experts, the honey promotion campaign should be implemented that will deploy all respective tools – such as booklets, electronic marketing, and video clips.

Improve Access to Beekeeping Technologies – Support may be implemented via targeted grants and co-financing requirements from beekeepers. The aim of the grant scheme should be the renewal of critical beekeeping equipment (such as beehives) and technologies that will enable the beneficiaries to increase productivity and improve competitiveness.

Support Jara Beekeeper's Association in the Creation of Honey Processing Enterprise – Assistance in the creation of enterprise will significantly increase the prospects of Jara honey's integration into local and international supply chains. The association represents a well-established, trusted institution with a good track record and notable success stories. The creation of enterprise will enhance the adoption of modern processing technologies, intensify cooperation between the association members, increase the volume of produced honey, and enhance export competitiveness. The enterprise will create several jobs in Keda municipality.

Annex 1: Honey Production in Processing Enterprise

- 1) Cutting from the frame of the honeycomb is done with the machine presented below:



- 2) Drain of the honey is done with the machine presented below:



- 3) The drained honey is casted in the below reservoir via tube:



4) The filtering of the drained honey is done in the equipment presented below:



5) Filtered honey is transferred to the homogenizer (machine mixing honey for achieving homogenization) where homogenization process takes place:



- 6) Homogenized honey is transferred to the equipment presented below, that ensures casting in jars and packaging:



7) The machine presented below conducts labelling of packaged jars:

