Study of Agricultural Value Chain Potential in Pshavi, Khevsureti and Gudamakari

Survey Report

N(N)LE "People in Need"

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October – 2019

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Introduction

The present document has been prepared by the Biological Farming Association "Elkana" based on a contract from the People in Need (PIN) for the project "Sustainable Development of the Area of Aragvi Protected Landscape and the Local Communities", which, in turn, is being implemented within the framework of the 5-year programme "Sustainable Development of Mountainous Regions", with financial support of Czech and Austrian Development Agencies. The purpose of the mentioned document is an analysis of agricultural products' value chains in Pshavi, Khevsureti and Gudamakari. From 7 October to 25 December 2019, experts of the Biological Farming Association "Elkana" conducted a research in the villages of Gudamakari (Zanduki, Gamsi, Chokhi, Kitokhi), Pshavi (Udzilaurta, ShopKo, Tkhiliana, Vakissopeli, Chidali, Chargali, Magharoskari, Kalilo, Ukanapshavi) and Khevsureti (Tsinkhado, Korsha, Barisakho, Gudani, Chalisopeli, Kobuli, Khakhmati, Biso, Datvisi), where 60 persons were interviewed (see Annex 1). The objectives of the research were to:

- make value chain analysis in animal husbandry (dairy and beef), beekeeping and fish farming;
- assess the organic agriculture potential in all the three target regions;
- explore possibilities of arranging innovation models in all the three target regions.

Principal findings

A study of value chain in animal husbandry was conducted in Pshavi, Khevsureti and Gudamakari. The research comprised three sectors – Livestock husbandry, beekeeping and fishing. This chapter gives a brief summing up of the research findings.

Livestock husbandry

The research found livestock husbandry one of the leading sectors in the target region, as well as the factors interfering with the sector development:

- Degraded cattle (dairy);
- Improper management of pastures, grasslands and lack of necessary machinery; unbalanced feeding;
- Sectoral knowledge deficiency;
- Unorganized food production;
- Lacks of access to modern technologies.

Based on the above, the livestock sector development will require:

- ✓ Introduction of small-scale machinery (motor mowers) for haymaking;
- ✓ Introduction of quality haymaking practice, implying the proper time-frame for grass cutting and proper storage of hay;
- ✓ Setting up of a demo farm to be fully equipped with modern technologies, such as: a milking equipment, drinking bowls; introduction of artificial insemination; diversification of feeding diet;
- ✓ Demonstration of success stories;
- ✓ Setting up small-scale processing units.

Beekeeping

Favourable environmental and climatic conditions make beekeeping one of the profitable sectors in the region. In spite of this, the research identified a number of the following problems in the sector:

- Outdated beehives and equipment;
- Lack of access to modern technologies;
- Low-productive and degraded bee colonies;
- Improper treatment;
- Lack of processing units;
- Sectoral knowledge deficiency.

Based on the above, the livestock sector development will require:

- ✓ Sectoral trainings;
- ✓ Purchase of modern beehives and equipment;
- ✓ Demonstration of success stories;
- ✓ Setting up small-scale processing units;
- ✓ Arranging a demo apiary and processing unit.

Fish farming

Fish-farming is not developed in the region. The factors interfering with the sector development include:

- Sectoral knowledge deficiency;
- Lack of access to finances;
- Unorganized production.

The fish-farming sector development will require:

- ✓ Sectoral trainings;
- ✓ Arranging a demo model;
- ✓ Demonstration of success stories;
- ✓ Assistance in preparation of respective project proposals.

Methodology

To implement the research, the association "Elkana" used the Rapid Rural Appraisal (RRA) methodology. The RRA can be considered as a collection of methods, making possible to obtain and analyse correct and reliable information in a short period of time. Semi-structural interviews were used to appraise and analyse the situation existing in the target villages.

Interviews were conducted with the persons, directly possessing information and knowledge associated with the issue under study. The length of each interview was 1-2 hours. Diversity of respondents was important for making it possible to analyse all components of the entire value chain.

The target groups of research were:

- Representatives of local government
- Farmers
- Entrepreneurs
- Guesthouse owners

The working process consisted of several stages:

Setting up of a working group (WG) – the group was composed of the association "Elkana" employees: Tamaz Dundua - Group Leader, Tamar Noniashvili David Dolidze, Vakhtang Ghlonti, Mariam Tomaradze, Irakli Javakhishvili, and Manana Gigauri.

Preparation of a questionnaire - to conduct semi-structural interviews the WG prepared a questionnaire (see Annex 1). The questionnaire was developed on the basis of the Terms of Reference (ToR) provided by the contractor.

Field operations – on 7-12 October, the WG conducted individual interviews in the target area. The mobilization of local population was ensured by the local PiN coordinators, who had preliminarily selected representatives of different groups involved in the value chain and invited them to a meeting. Meetings took place in the following villages: Gudamakari – Kitokhi; Khevsureti – Barisakho; Pshavi - Shuapkho. In addition, during the field work in the target area the WG interviewed randomly selected persons and "Elkana" beneficiaries, who were contacted and agreed for interview by the WG in advance. These interviews were conducted in the following villages: Khakhmati, Gudani, Kora, Shuapkho, Ukanapshavi, and Chargali. The interviews were conducted with the representatives of different groups of the value chain, which make it possible to obtain, as a result of research, the most needed information

Sector	Number of the surveyed		
	Gudamakari	Khevsureti	Pshavi
Dairy husbandry	6	15	15
Beef husbandry	4	8	9
Sheep breeding	3	0	2
Beekeeping	1	9	23
Fish breeding[1]	0	0	0

Information processing and preparation of a survey/report – after completion of the field operation, the obtained information was processed and analysed. In the process of analysis, the WG made use of the statistical data of the Regional Agricultural Consultation Service and the National Statistics Office of Georgia (GEOSTAT), "Georgian Sheep Sector Value Chain Analysis" made by ISET, a brochure "On Some Issues of Cattle Breeding and Care", and the Specifications document of the Geographical Indication (GI) Dambalkhacho (traditional cheese).

[1] No one is directly engaged in fish breeding among the surveyed (one has stopped the activity due to the lack of necessary knowledge and experience); however, the development of the sector raised definite interest among the surveyed.

Pshavi, Khevsureti and Gudamakari – General Data

Gudamakari is a historical and geographical region of Eastern Georgia. Administratively, it is within Dusheti municipality. The valley is located at 1050-2300 m.a.s.l, comprises 29 villages (9 abandoned rural settlements), where the number of residents makes 234 (see Annex 2).

Khevsureti is a historical and geographical region of Georgia. Administratively, it is within Dusheti municipality, located in the highland area of Eastern Georgia, on the northern and southern slopes of the Great Caucasus Range and comprises about 1050 sq. km of area.

The Great Caucasus Range divides Khevsureti into two parts, or Pirikita Khevsureti (north-eastern) and Piraketa (south-western) Khevsureti. Pirikita Khevsureti comprises the Mighmakhevi, Shatili and Arkhoti valleys, Piraketa – the Aragvi valley.

The entire territory of Khevsureti is divided into two communities: Khevsureti (administrative centre – Barisakho) and Shatili (centre – Shatili). The target community of the study is Barisakho, comprising 38 villages, population – 526 persons, 167 households (see Annex 3).

Pshavi is a historical and geographical region of Georgia. Administratively, it is within Dusheti municipality. It is located within the Aragvi valley and comprises the present Dusheti region. Its area is about 550 sq. km. Pshavi in the north-east boards with the Great Caucasus Range, which separates it from Tusheti and Piraketa Khevsureti; in the west - with Piraketa Khevsureti, Gudamakari, Khando and Chartali; in the south - with Shida Kartli, and Ertso-Tianeti - in the east. Pshavi is divided in two parts: from the river Aragvi head of Pshavi to Ortskali is Ukana Pshavi community, while below Ortskali, in the lower reach of the Aragvi, there is that of Magharoskari. It is located at 1000-3000 m.a.s.l. 618 people reside in 24 villages of Pshavi (see Annex 4).

Data obtained as a result of individual interviews

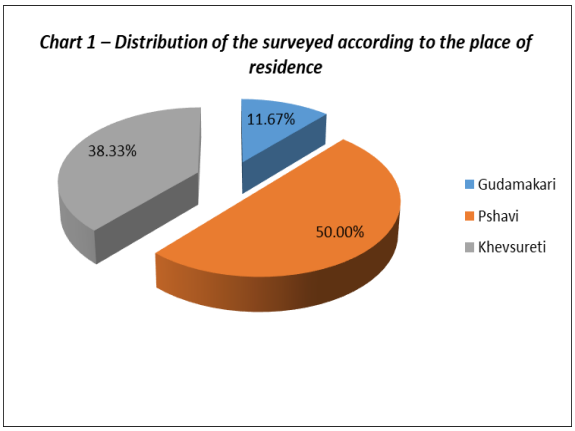
This chapter sums up the data obtained as a result of individual interviews, which reflect: gender balance, age composition, family composition; education level; sources and size of income, and allocation of fixed assets and productive resource being in possession/ownership, as well as the size of incomes gained from their use.

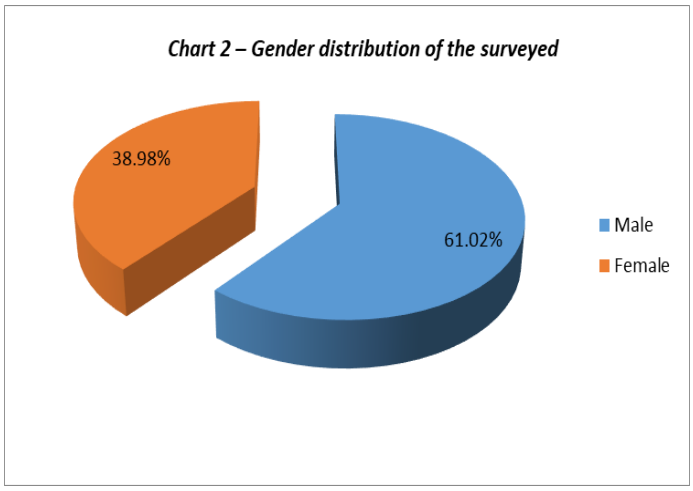
The obtained data also reflect opinions fixed by the surveyed on the main impeding and contributing factors to the conduct/development of economic activities in the target region, as well as on the current relations between the local population and businesses.

Information about the surveyed

60 preliminarily selected local residents were interviewed in Gudamakari, Pshavi and Khevsureti.

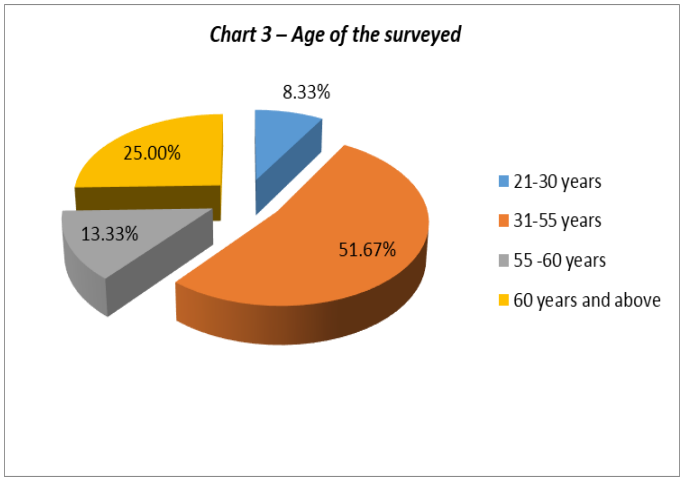
As can be seen, the majority of the surveyed are Pshavi residents, while the least number of interviews were taken in Gudamakari. The number of the surveyed is directly proportional to the number of population.



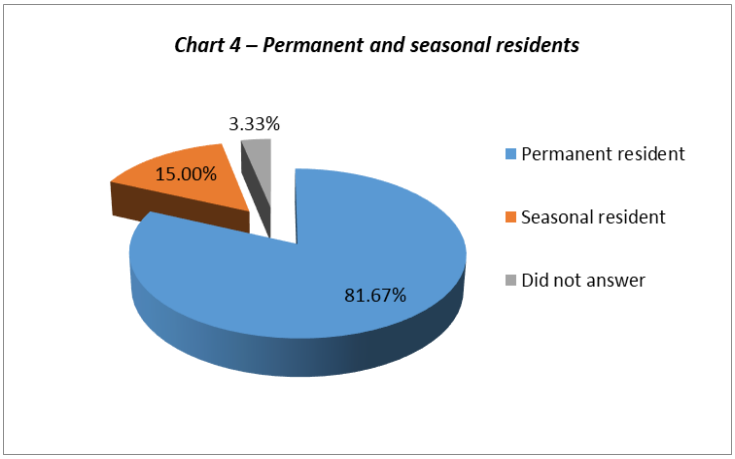


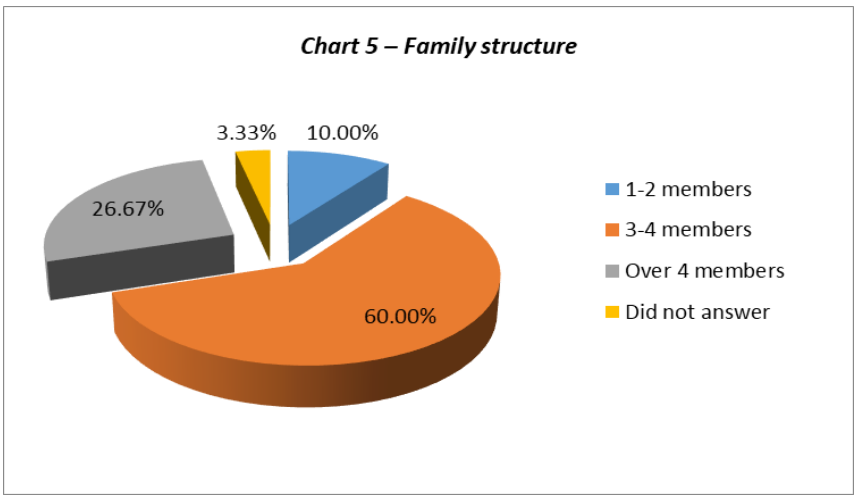
Men predominated in the surveyed, which was not the result of special selection. Also worthy of mention is the fact that during interviewing both men and women answered on behalf of their family rather than of own person.

The majority of the surveyed are able-bodied, active population, although the number of those over 60 is rather high (25%). The share of people of middle age, retirement age and juvenile age makes 13.33% and 8.33% respectively.



The majority of the surveyed are permanent residents of the target regions (81.67%, 58 respondents answered the question). It should also be mentioned that in spite of the fact that 9 respondents, when answering the question on economic activity, stated that they were seasonal residents in the target region, they also fixed that they owned means of production through which they gained income. This discrepancy was caused by the fact that when answered questions personally, they stated about seasonal work they do, while in the course of interviewing they fixed information on behalf of their families.

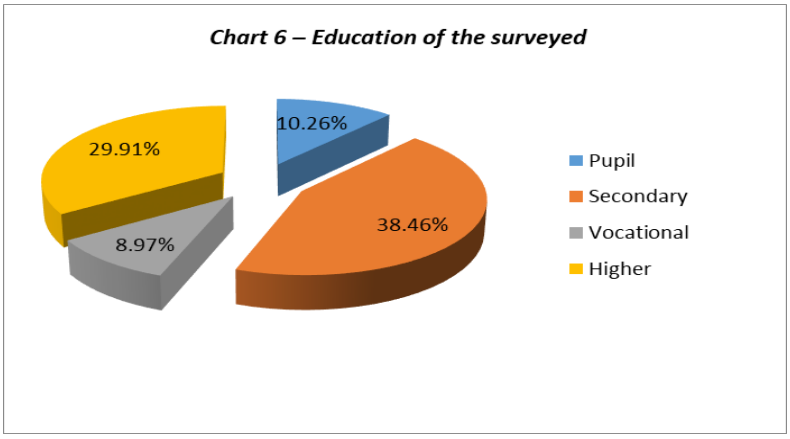




The family structure study of the surveyed showed that 3-4-member families predominate among the permanent residents of the region (60%). Many are families with more than 4 members, and the majority of such families consists of the members of 2 and more generations (26.67%). The survey revealed 1-2-member families as well.

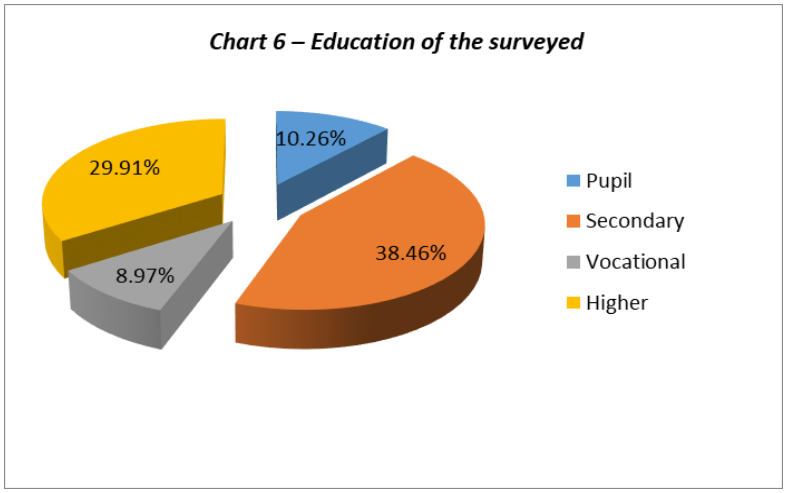
It should be mentioned that the small-member families are represented generally by old and middle age people and among the surveyed there was no family, where the young and old people would live separately from each other. It should be also mentioned that the number of small-member families is low and makes only 10%. The total number of members of the surveyed families amount to 234.

It is also to be mentioned that the number of young people under 18 is rather low and the families are mostly represented by the people above 30 years of age, which is indicative that the birth rate in the region due to various reasons (social status, shortage of jobs, migration, etc.) is critically low.



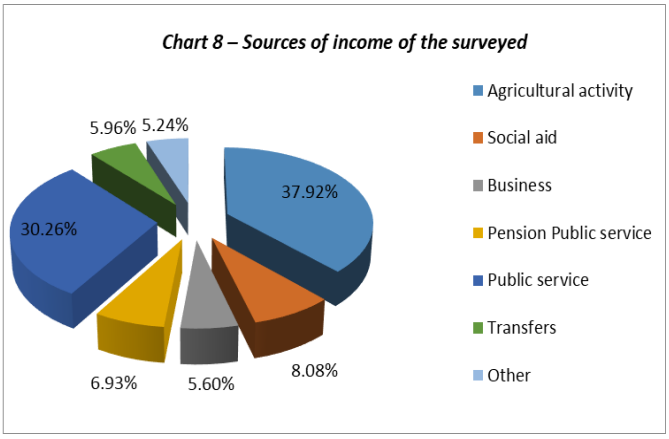
The information about education provided by the surveyed concerned both personal education and that of the whole household. The information

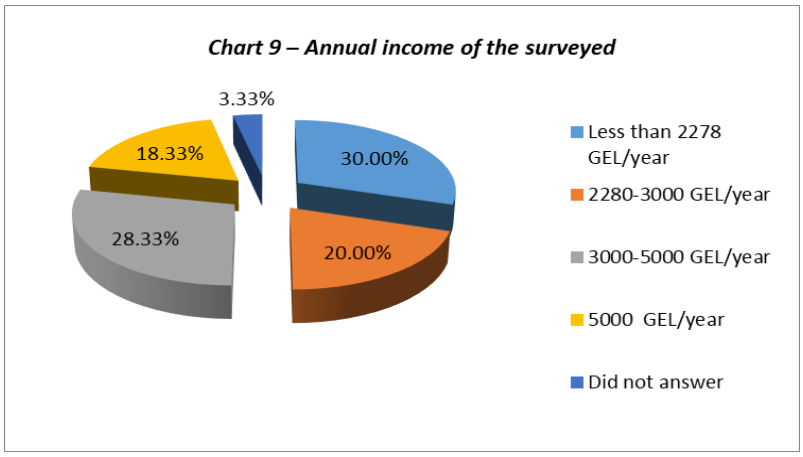
revealed that families of the surveyed consisted mostly of full-age members with secondary education (38.46%). The number of those with vocational education is rather low (8.97%). The population with higher education makes 29.91%.



The data of this given survey identified a rather hard social background. About 28.33% of the households are social aid recipients, while 25% are pensioners, constituting 53.33% in total, which rather high indicator.

The study showed that the major portion of income of the surveyed falls on agricultural activity - 37.92%, or public service (local government – 5 persons; school, kindergarten, and border police – 13 representatives) - 30.26%. The income from transfers, pension and social aid totals 19.64%, which also a rather high share in the population's budget. These incomes total 87.82%. Unfortunately, a share of income from business in the revenues of the surveyed makes only 6.93%.



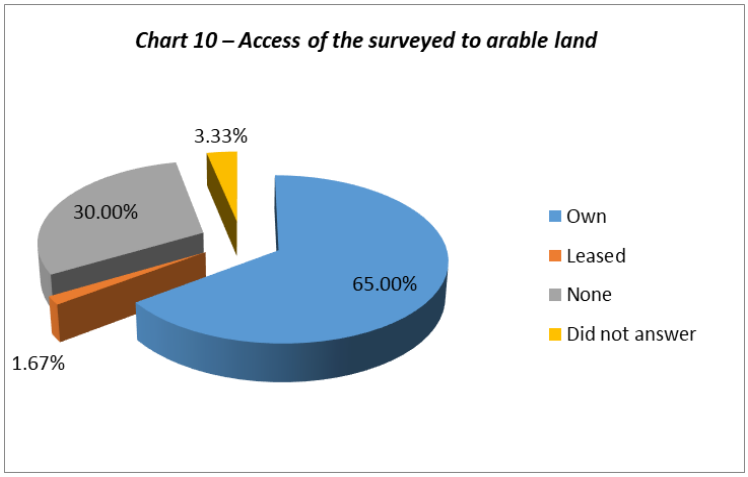


The annual incomes per household also indicate of the hard economic position of the families surveyed in the target regions. Incomes of 30% of the households are below the subsistence level, while 48.33% of the respondents live in poverty, making 78.33% in total. Only 18.33% of the respondents can be considered as average-income households.

The rate of identified incomes speaks of low reinvestment opportunities of the surveyed and indicates that the population is generally oriented at self-sufficiency.

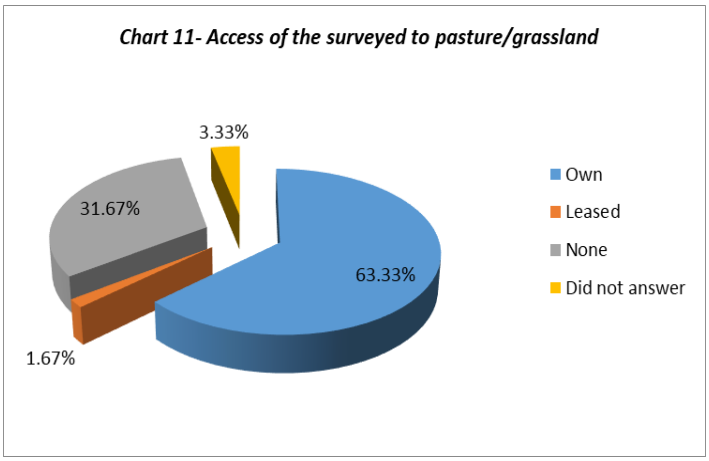
Access of the surveyed to fixed production assets and resources

Arable land



65% of the surveyed have in possession land parcels, while 35% do not own any arable land. In addition, land parcels of the majority of the surveyed (65%) constitute only 0.3-0.9 ha, which located both a dwelling house and auxiliary premises. Only 20% of the surveyed have in possession land parcels over 2 ha (together with the household land) and only 15% possess 10-25 ha arable land. Based on the obtained data, it can be concluded that in all the target areas there is a deficiency of arable land. Also of importance is the fact that only 1.67% surveyed lease arable land, which is indicative of a low interest in agricultural production as a business on the part of the local population.

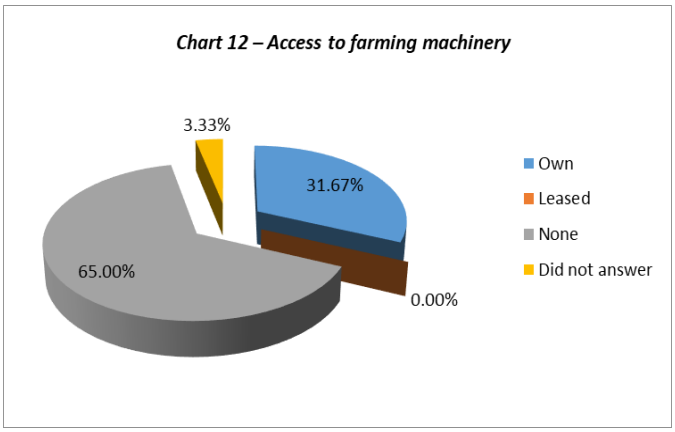
Pasture and grassland



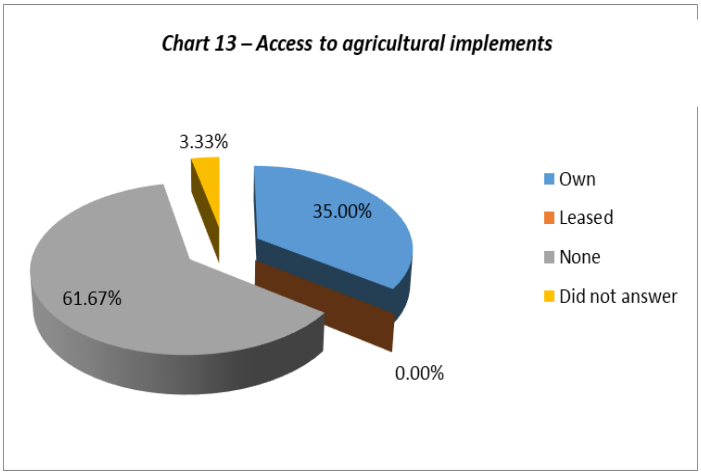
Own pasture/grassland have only 63.33% of the population, while 31.67% are generally devoid of pasture and grassland. 41% of the population have in possession up to 3 ha of pasture/grassland, 16.6% own about 3-10 ha, and only 5% of the surveyed possess about 10-40 ha of pasture/grassland. The low share of the respondents leasing pasture/grassland (1.67%) is also indicative of a low interest in the development of agriculture as a business sector.

Farming machinery

Only 31.67% possess small-scale farming machinery, implying that 68.33% of the local farmers still practice traditional (manual) farming techniques. The low activity of farming activities is indicated by the rate of leased farming machinery, constituting 0%.



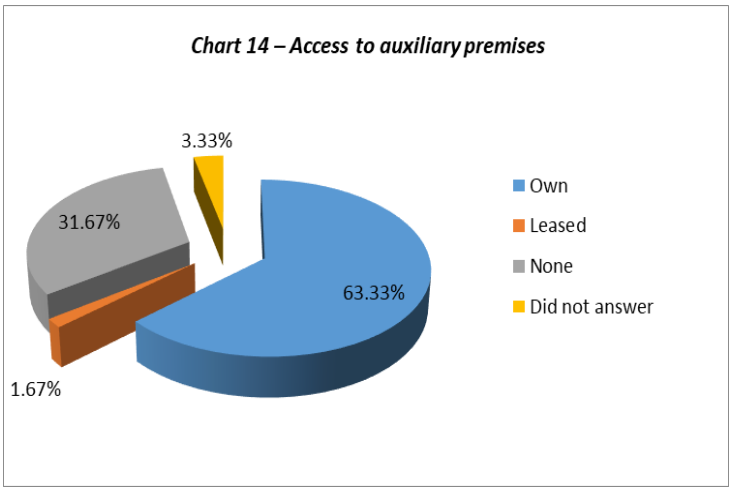
Agricultural implements



35% of the surveyed own agricultural implements (motor cultivator, petrol-powered saw), which is also a rather low indicator. As in the case of farming machinery, the low rate of leased agricultural implements (0%) is also indicative of the low local agricultural activities.

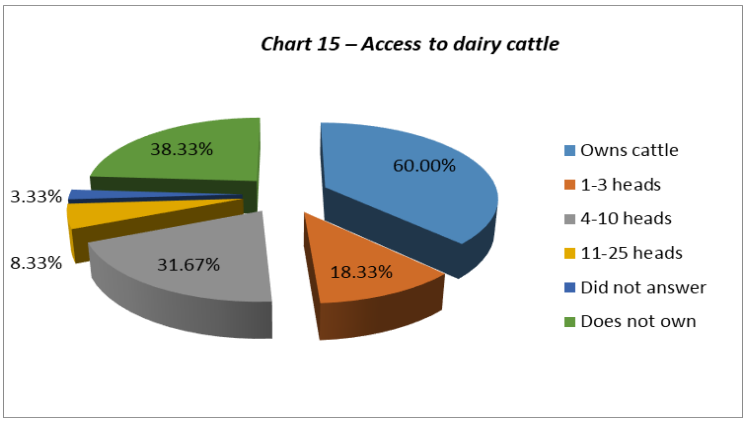
Auxiliary premises

Auxiliary premises designated for agricultural activities are owned by 65% of the surveyed; however, a greater part of these structures is in the obsolete state and needs investments. The rate of leasing of auxiliary premises constitutes 1.67%, which also indicates a rather low interest on the part of respondents.



Current position of the surveyed in the livestock sector

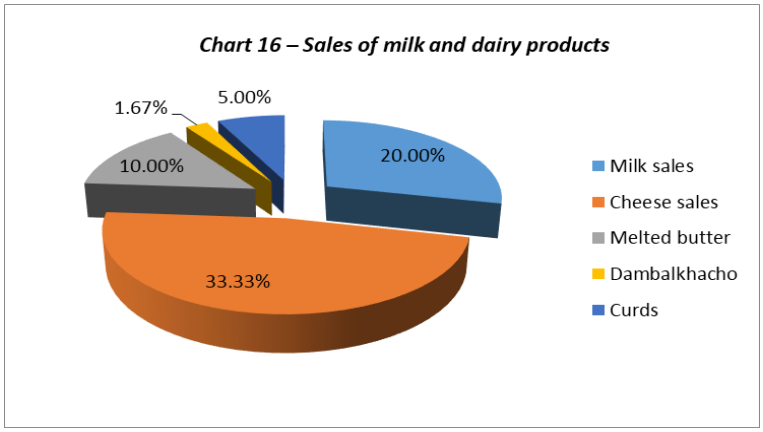
In the course of interviewing, the respondents were asked about the livestock sector activities characteristic of the target region (dairy and meat cattle husbandry, sheep breeding, beekeeping, and sheep farming), as a result of which the following information was obtained



Dairy cattle husbandry

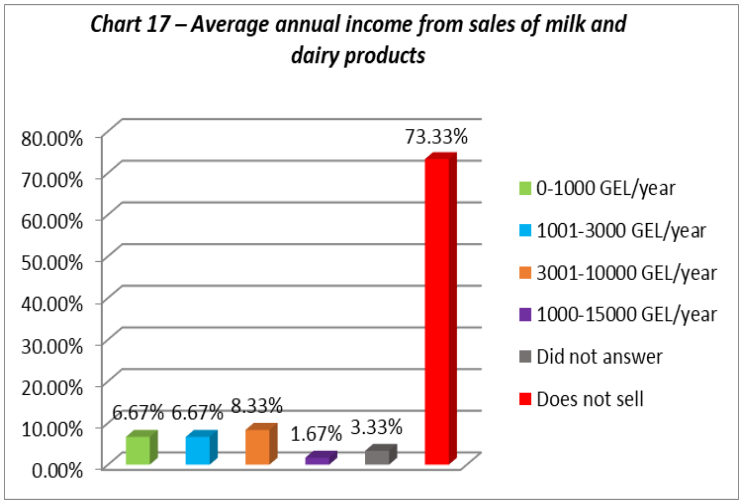
The study showed that 60% are owners of dairy cattle. Out of them, 18.33% own 1-3 heads, and 31.67% - 4-10 heads (50% in total). These are the farmers that use the income from cattle generally for self-sufficiency and rarely sell their products, only in case of excess productivity.

The market-oriented farmers among the surveyed (keeping11-25 heads) constitute only 8.33%, indicating on the low level livestock development. The low development of dairy cattle husbandry is indicated also by the rate of sales of dairy products.

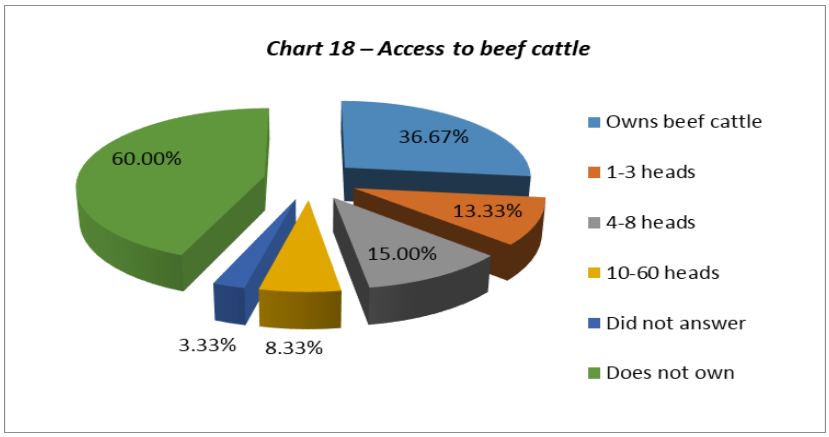


The major part of respondent farmers – dairy cattle owners is engaged in the sale of cheese made under household conditions. In parallel, they sell melted butter and small amounts of cottage cheese and dambalkhacho; however, only 20% of the surveyed are occupied with the sale of major product of the sector – milk, which makes only a third of the respondents engaged in livestock husbandry. Average annual incomes gained by the study respondents from sale of milk and dairy products also indicate on the sector problems.

nly 8.33 % of the surveyed receive GEL 3,000-10,000/year from sales of milk and dairy products, and 1.67% - GEL 10,000-15,000. These figures indicate that a major part of the dairy cattle-engaged respondents does not sell the product and consume it in the household.

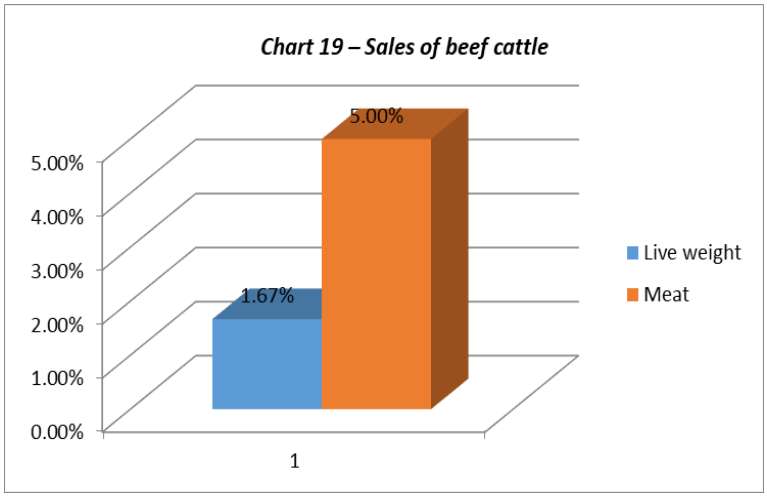


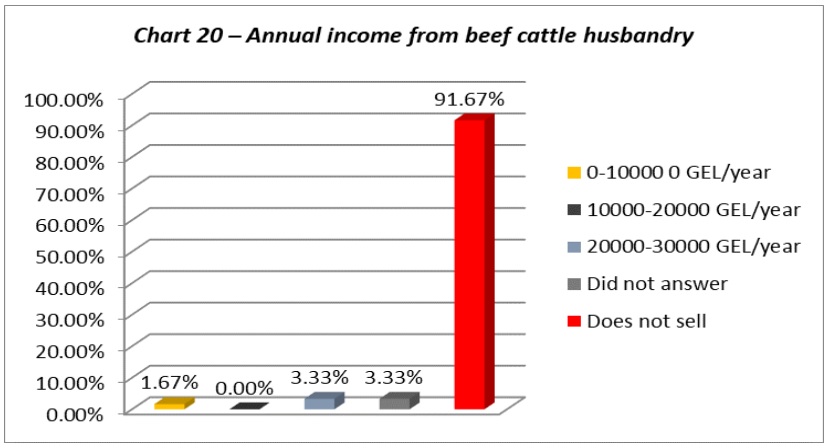
Beef cattle husbandry



Only 36.67% own beef cattle. 13.33% of the respondents own only 1-3 heads, while 15% - 4-8 heads. This is usually a yield of dairy cattle and should not be considered in the beef sector. Only 8.33% of the respondents follow beef cattle breeding, which, given the pasture and grassland resources of the region, is very low indicator and tells about the low development of the sector.

Additional information about the low-development level of the sector is provided by the beef and bull-calf sale statistics. Bull-calves are sold only by 6.67% of the respondents and, out of which 1.67% sell them alive, and 5% as beef, which supposedly is locally consumed



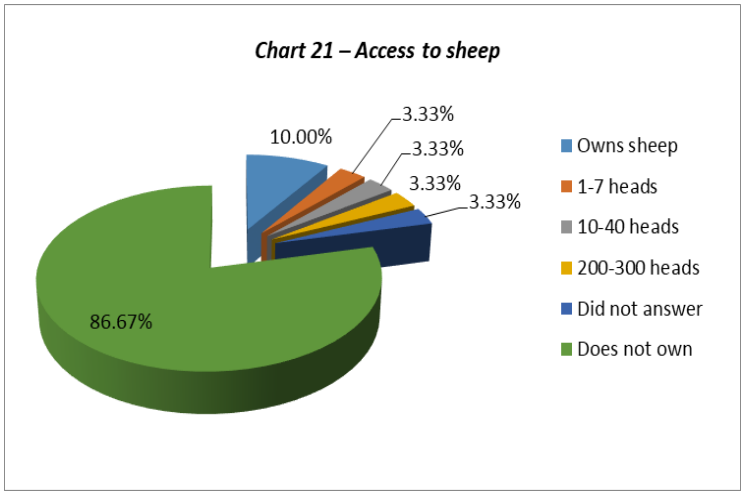


Based on the data, a great deficiency of beef cattle is fixed in the region.

Only 1.67% of the respondents get GEL 0-1000/year from beef cattle husbandry; those getting GEL 20,000-30,000/year represent only 3.33%. The rest either do not own the beef cattle or keep it for personal consumption. Hence, it can be concluded that only 3.33% of the respondents are occupied with the beef cattle husbandry in the region.

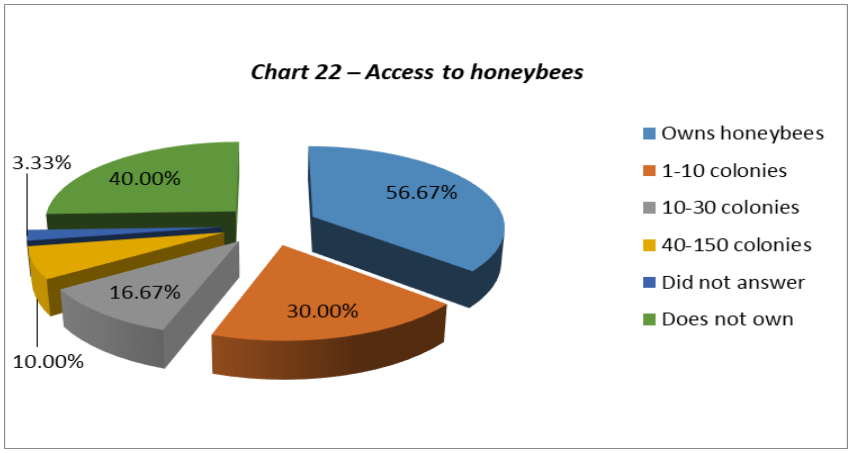
Sheep breeding

The survey results showed that to date only 10% of the respondents own sheep. The chart indicates that only 3.33% of the respondents are occupied with professional sheep breeding.



86.67% of the respondents do not keep sheep at all and this traditional agricultural sector has been practically forgotten here. It should be also mentioned that social aid can be considered as a probable reason because of which the sheep breeders did not name the average sales data and the average annual income from sheep farming.

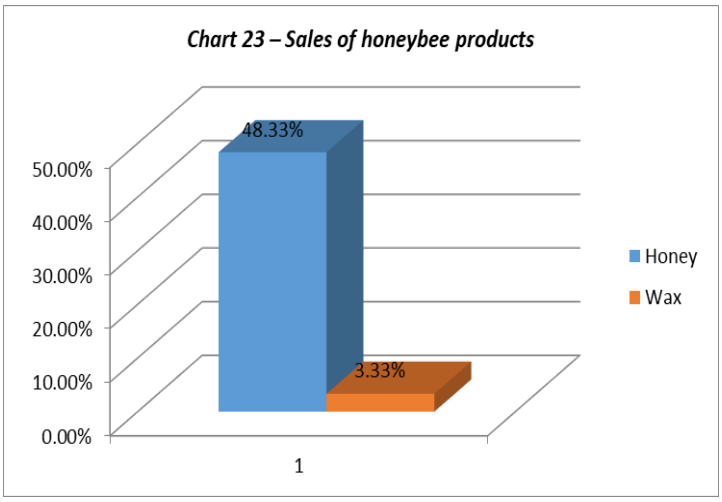
Beekeeping

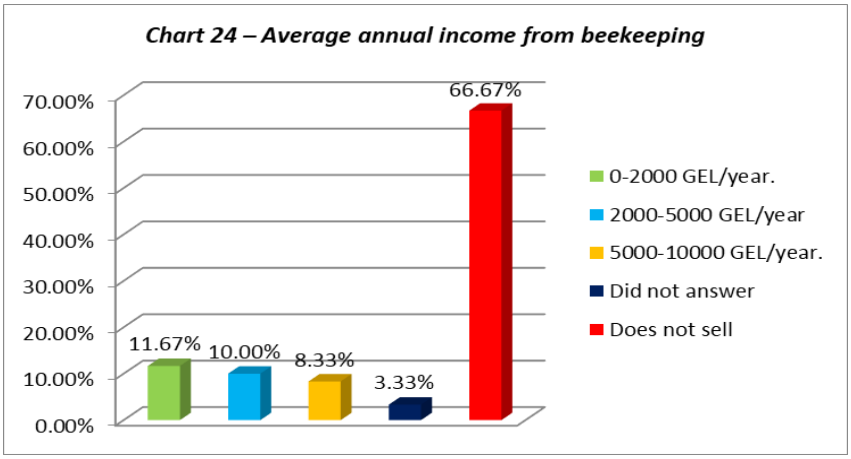


Beekeeping has turned to be the most popular sector with the potential of development in all the three target regions. Already 56.67% of the local population follow beekeeping, out of which 10% do it professionally and keep 40-150 honeybee colonies; 16,67% are growing beekeepers, keeping 10-30 bee colonies, while the largest part (30%) are holders of 1-10 honeybee colonies. They use the honeybee product for own consumption mainly.

The respondent beekeepers mostly sell 2 kinds of honeybee products, these are honey and wax. 48.33% sell honey, 3.33% - wax.

The local beekeepers do not produce such marketable and high value products, as royal jelly, bee venom, etc.



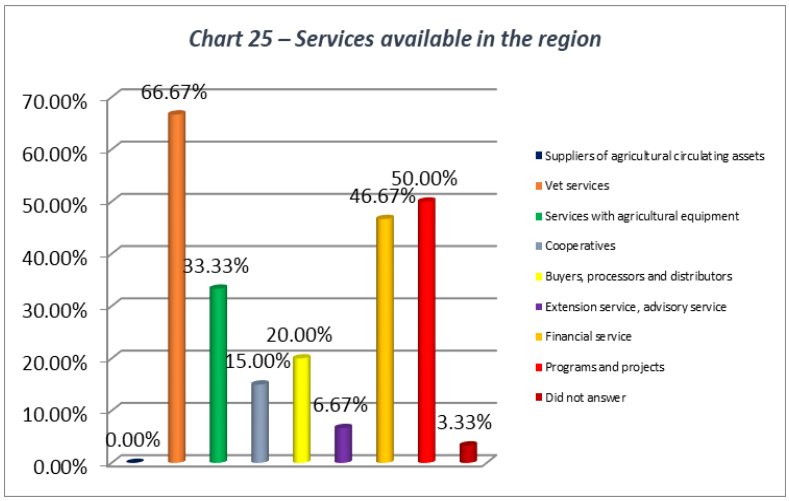


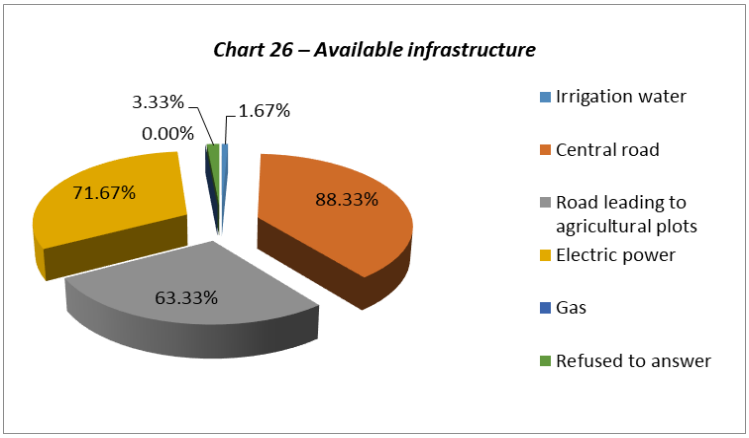
A comparatively high income among the respondents engaged in beekeeping (2,000-10,000 GEL/year) is fixed, although such income is enjoyed only by 18.33% of the surveyed.

Production capacities in the target area

This chapter presents an opinion of the surveyed respondents regarding means of production, services and the respective infrastructure available in the target area. In addition, it also presents their opinion in connection with the factors interfering with the livestock sector development.

The surveyed respondents fixed that the target area has a potential of rendering different types of services; however, it was also found that most of the locals do not make use of both consultation services and the services of the suppliers of farming facilities.

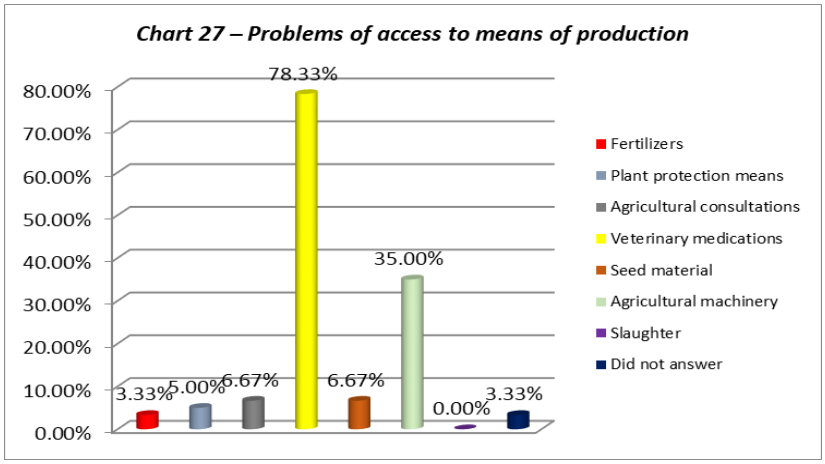




In the opinion of the surveyed, the following come into picture in connection with all the three target regions:

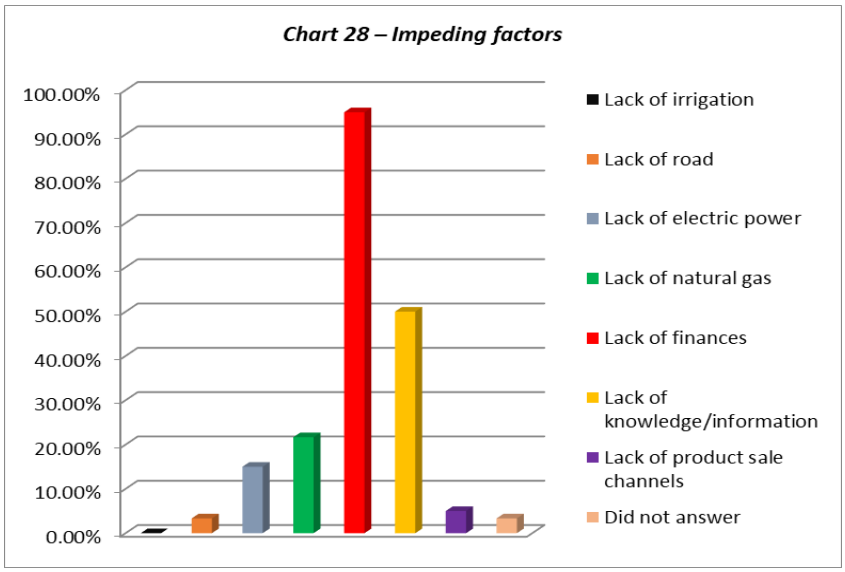
- The central road and the roads leading to the land plots are satisfactory and do not limit farming operations.
- Most of the surveyed positively assess uninterrupted electricity supply, but it concerns only supply to their dwelling houses.
- The situation in connection with irrigation water and gas supply was assessed negatively.

In the course of interviewing, the lack of access to veterinary services, the absence of farming machinery, the shortage of consultations, the inaccessibility of seed material and veterinary medications were named as the most serious problems of the agricultural development. Chart 25 presents the data



related to low level of using agricultural inputs and advisory services, which is result of the low quality of and/or lack of access to such services and represents a serious problem for the target area.

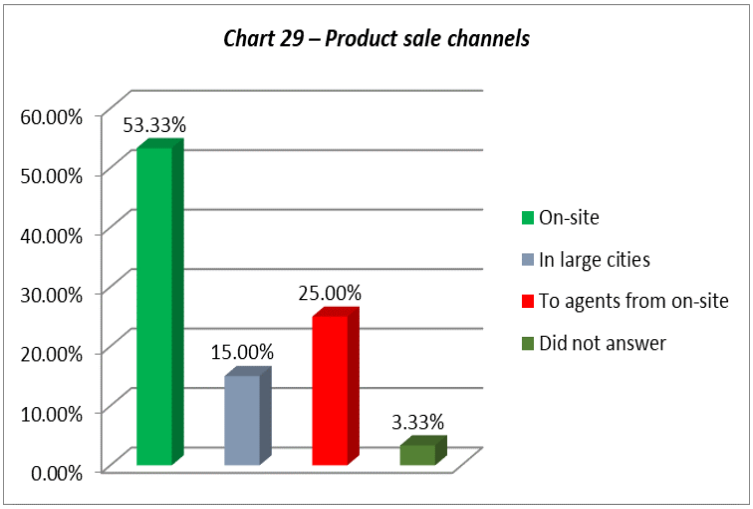
The lack of access to finances and shortage of knowledge were named by the surveyed as the most serious factors impeding the agricultural business development.

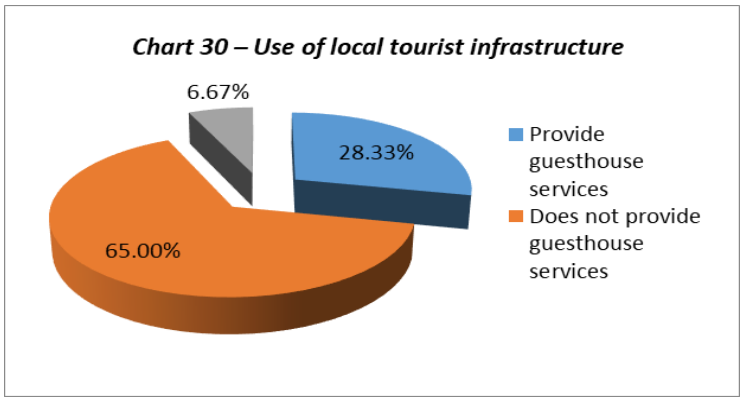


It should be mentioned once again the low awareness of the local population on resources, such as irrigation water, farming machinery services and other economic infrastructure. It, therefore, can be concluded that the level of agricultural development is rather low in the region and that most of the local population do not perceive it as a stable source of income.

Structure of sales in the target area

The sales statistics also indicates small amounts of the products produced by the respondents engaged in agricultural activities. The study showed that 53.33% of the surveyed sell their products on site, from the yard, while 25% deliver them to resellers. Only 15% manage to sell own products on big city markets.





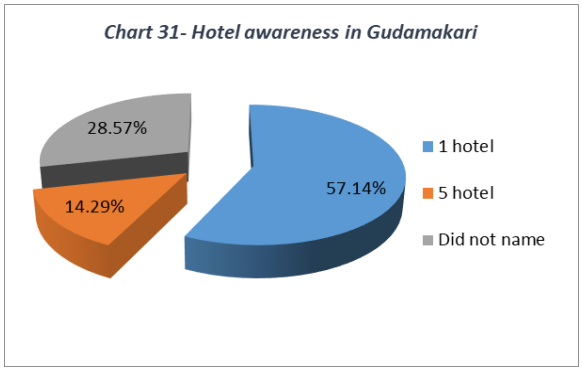
The growing role of the tourist infrastructure in the development of sale channels is of particular importance.

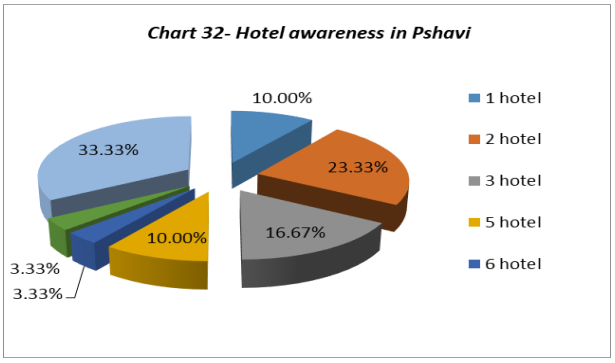
The tourist sector is gradually occupying a bigger share in the sales structure. However, the interviews of the respondents also indicate that

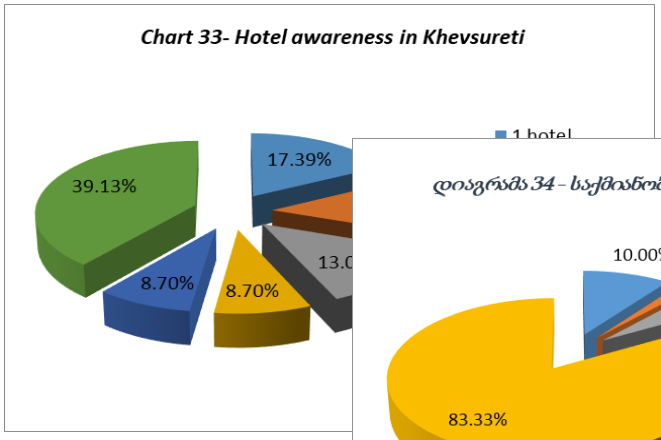
only 28.33% sell products through hotels and guesthouses. In spite of these low statistics, the tourist infrastructure importance in the sales of agricultural products is growing, given that several years ago this indicator factually equalled zero.

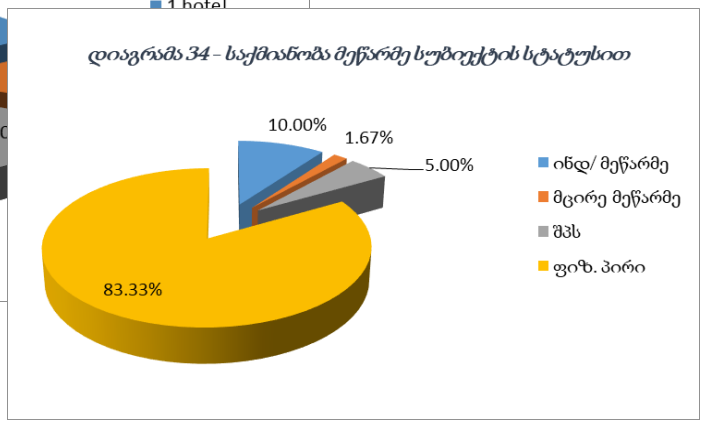
It should be mentioned here that a rather small number of respondents has information about the possibility of using these channels. The unfavourable results of the survey on the existence of hotels makes a possibility of making such a conclusion. The number of persons having no information about existence of tourism and hotels in all the three regions is rather high among the respondents: in Gudamakari – 28.57%; in Pshavi – 33.33%; in Khevsureti – 39.13%.

Those having definite information about hotels also fix different opinions and superficial knowledge of the issue, which additionally evidence the fact that the majority of local residents is not engaged in tourism activities either directly or indirectly; correspondingly, they do not even expect any benefits from tourism development.







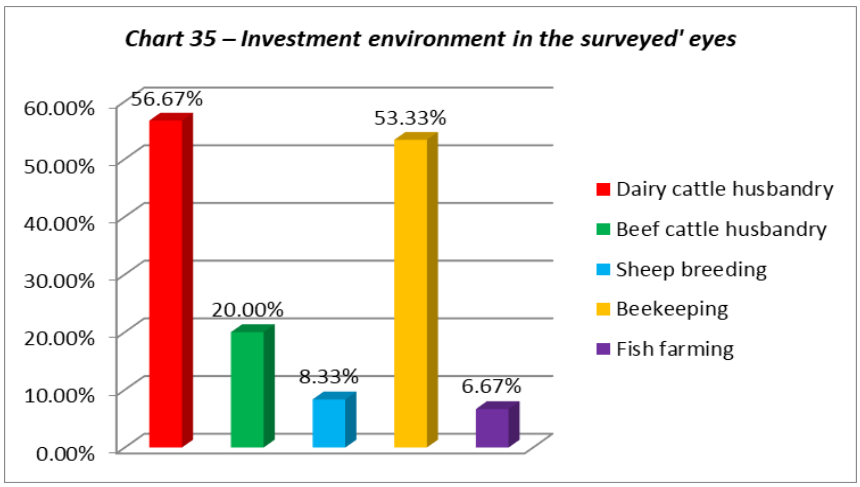


The above-mentioned problems are supported by the survey results, fixing low entrepreneurial activity of the respondents in the target area; in particular, the state of affairs in connection with the entrepreneurial activity legalization is rather

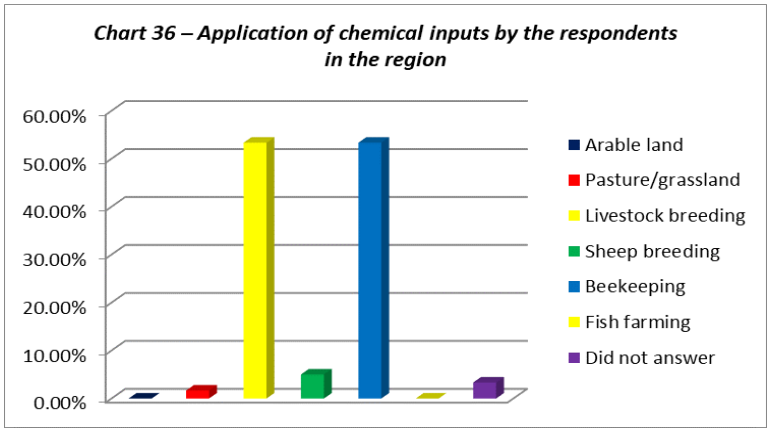
poor: In spite of the fact that a large part of the surveyed gains a substantial income from agricultural production, only 11.67% of them are registered as an individual entrepreneur and 5% as a limited liability company.

These data once again evidence that most of the surveyed are oriented at self-sufficiency and are less involved into the market relations.

The fixing of the opinion of the surveyed concerning the desirable investment directions in the region makes it possible to assess the agricultural sector's potential according to the respondents.

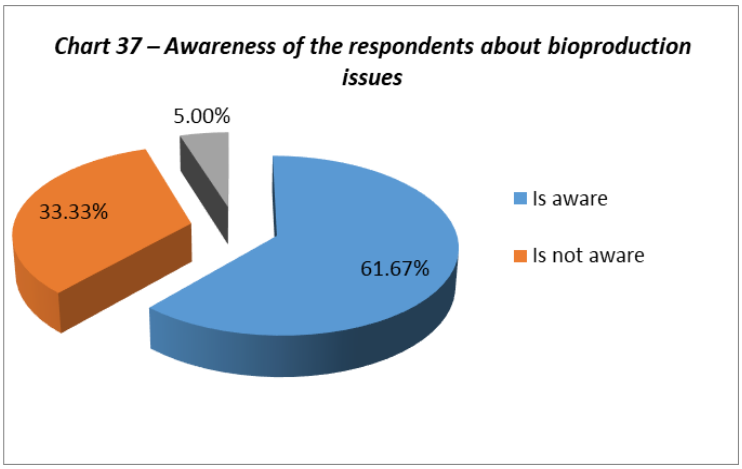


The survey results indicate that dairy cattle breeding and beekeeping lead among the desirable investment sectors. They are followed by the beef cattle breeding, while the positions of sheep breeding and fish farming are rather weak. The lesser popularity of fish farming is associated with a special deficiency of water resources deficiency and shortage of sectoral knowledge, while the problem of sheep breeding is conditioned by the lack of access to winter pastures and feed.



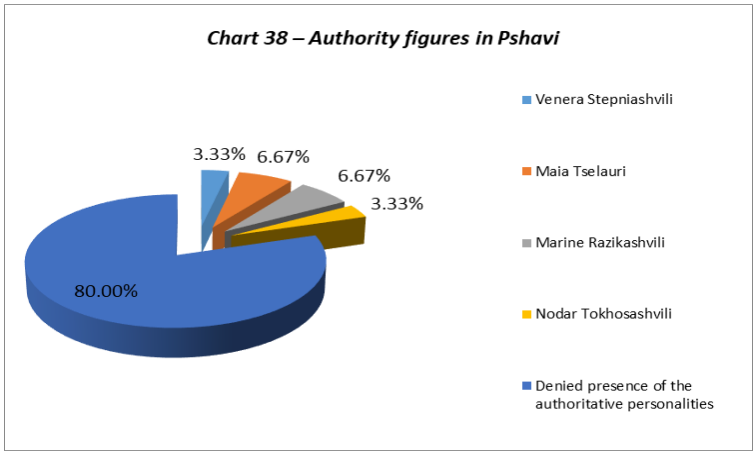
The question regarding a sector, where chemical inputs are used was answered as follows: Chemical inputs are used in all the three target areas for medicinal purposes in livestock sector (cattle breeding and sheep breeding) and beekeeping, while in arable land and posture/grasslands the chemical treatment is not applied.

The question regarding awareness of bioproduction and biomethods was answered positively by 61.67% of the surveyed, naming also the source of such information (Biological Association "Elkana"). True, it should be said here that the knowledge revealed by the surveyed was rather superficial.



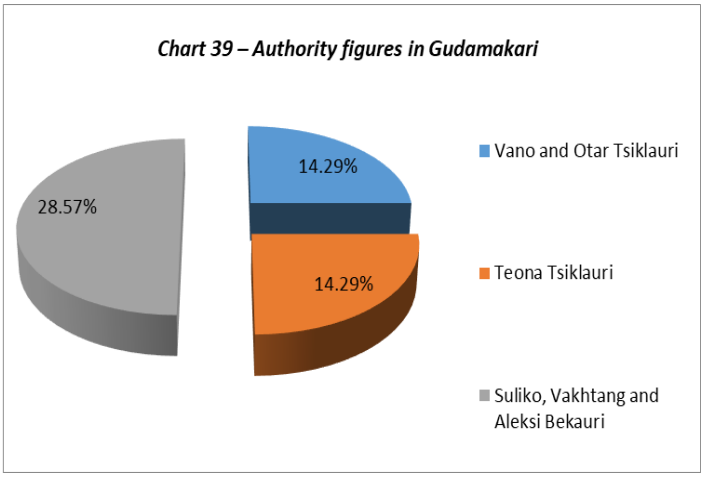
Social issues of the target area

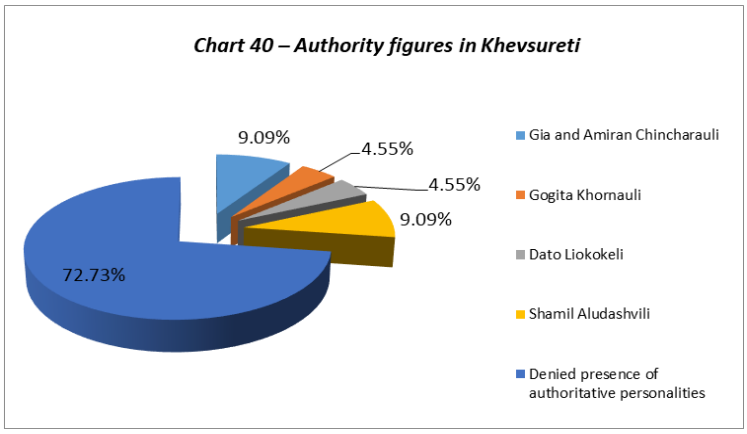
One of the questions of the survey was to identify authority persons in the regions, for using their resources in the establishment of contacts with the local population. Different opinions were expressed in respect of this issue, which will be presented in the regional context.



The picture fixed in **Pshavi** is as follows: 3 women and 2 men were named as authority figures. At that, the share of authority women made 16.67%, while that of men - 6.67%. It should be mentioned that 76.67% of the surveyed generally denied the existence authority figures in the region.

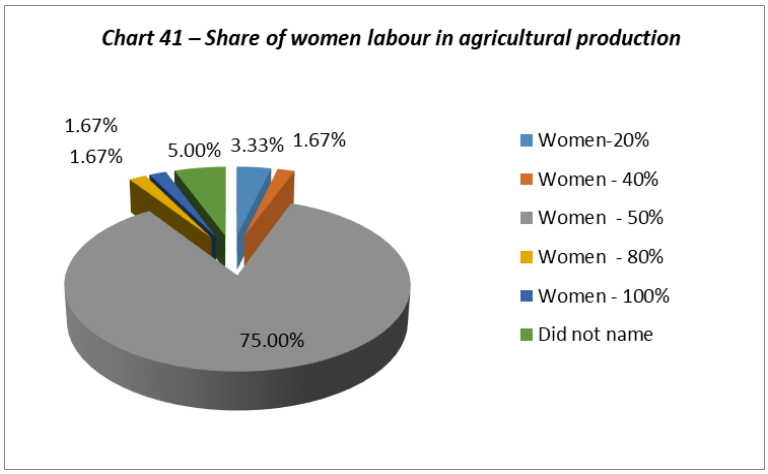
In **Gudamakari,** the presence of authority figures was evidenced by over a third of the surveyed. Here men were prioritized, although 14.29% named women as authority figures. 42.86% of the respondents denied the presence of authority figures.

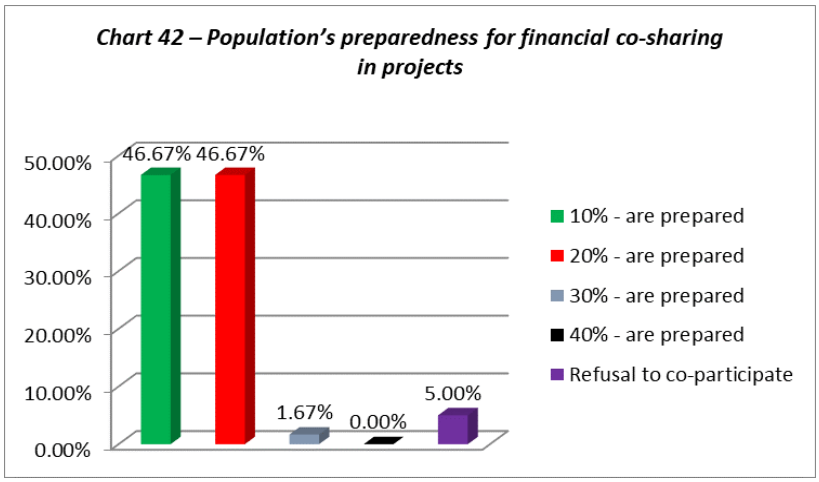




In **Khevsureti,** 69.57% of the respondents denied the presence of authority figures, while 30.43% named only men as such.

75% of the respondents think that labour between men and women are equally distributed. 16.67% did not answer the question. The rest 8.33% expressed different views, although the majority of them back a higher share of men labour.





The question regarding the volume of co-sharing of the respondents in the case of grant financing, a great part of the respondents agreed to co-sharing and stated that they are prepared to pay 10-20% of the grant amount (in a project worth of GEL 5,000-20,000). Only a small part of the population expressed willingness to a 30% co-sharing. At that it should be mentioned that 5% of the population is not prepared for co-sharing in general.

As can be seen, implementation of economic development programs in the region is rather rare and the greater part of the surveyed is not aware of the principles of co-sharing in grant projects.

Overview of the situation and of major problems in Pshavi, Khevsureti and Gudamakari

Gudamakari

Beekeeping

Beekeeping sector is weak in the Gudamakari valley. Here small-scale beekeepers prevail, who keep 3-4 honeybee colonies, make small amounts of honey which they use only for own consumption; they do not have honey extractors, the existing beehives are low-productive and of an out-dated design, in need of replacement. They also lack honey storage reservoirs that comply with food safety standard. There is not a processing unit for honey bee products in Gudamakari.

Livestock breeding

Population in Gudamakari mostly keep 1-15 heads of cattle, which are low-productive, both in the direction of beef and dairy direction. One of the main problems in winter is the insufficient supply of feed, which is conditioned by several factors: existing grasslands practically are not mowed, because the number of able-bodied population is rather small in the region, while the location of grasslands makes them inaccessible for large-scale farming machinery. A part of grassland is mowed manually with delay, and as a result the nutritional value of the hay is low; no combined feed is used. The locals buy hay for winter in the lowland, which is rather expensive and of low nutritive value. Small amounts of milk, cheese, butter, melted butter are produced in the valley, which are mostly used for own consumption, while an excess is sold on the local market.

Fish farming

There is a small trout-breeding farm in Gudamakari, which is not operable today – the locals lack sufficient knowledge and experience for putting the trout-breeding farm into operation.

Khevsureti

Beekeeping

Beekeeping in Khevsureti is better developed than in Gudamakari. Here generally medium-scale beekeepers (10-30 colonies) prevail, who produce honey not only for personal consumption, but also for sale – 1 kg honey is sold on-site for GEL 25. The beekeepers use an aluminium honey extractor and reservoirs, which do not comply with food safety standards. The majority of beehives available in Khevsureti are low-productive and of an outdated design, in need of replacement. There is not a processing unit for honey bee products here, therefore no other honeybee products are produced, except honey.

Livestock breeding

The local population mostly keeps 1-25 heads of cattle, which are low-productive, both in the direction of beef and dairy direction. Milk, cheese, butter, melted butter and *nadughi* (a soft cottage cheese, similar to Italian ricotta cheese) are produced in the valley, which are mostly sold on the

local market. Khevsureti has a better developed beef cattle breeding. The following practice is used in the valley: in the spring young cattle is bought in the lowland, to be fattened on mountain pastures and sold on site in autumn to resellers. Population fails to over-winter beef cattle, which affects the share of income for farmers.

Existing grasslands practically are not mowed, because the number of able-bodied population is rather small in the region, while the location of grasslands makes them inaccessible for large-scale farming machinery. A part of grassland is mowed manually with delay, and as a result the nutritional value of the hay is low. In the higher area of Khevsureti grasslands owned by population make minimum 5 ha while in the lower villages – from 1 to 3 ha.

There is no veterinary service in Khevsureti and the locals address Pshavi veterinary specialist.

Fish farming

Fish-farming is not developed in Khevsureti.

Pshavi

Beekeeping

Pshavi has generally medium- and-large scale beekeepers (10-150 colonies). The principal source of income of beekeepers is on-site sale of honey (GEL 20-25/kg). The demand for local honey is high. The beekeepers use aluminium honey extractors and reservoirs, which do not comply with food safety standards. A part of beehives available are low-productive and of an outdated design, in need of replacement. There is a non-functioning honey processing unit; no other honeybee products are produced, except honey, only one beekeeper is engaged in producing queen bees for sale.

Livestock breeding

Pshavi has a comparatively developed dairy cattle husbandry. The principal source of income is the sales of *dambalkhacho*. The local population mostly keeps 1-30 heads of cattle, which are low-productive, both in the direction of beef and dairy direction. Existing grasslands practically are not mowed, because the number of able-bodied population is rather small in the region, while the location of grasslands makes them inaccessible for large-scale farming machinery. A part of grassland is mowed manually with delay, and as a result the nutritional value of the hay is low. In Ukanapshavi, each farmer holds up to 10 ha. There is one veterinary specialist, serving the whole region.

A large milk processing plant, still non-functioning, exists in Pshavi (vil. Shuapkho). There are also several small-scale processors, which due to insufficient milk supply, operate only seasonally.

Fish farming

One trout farm that breeds and sells trout is operating in Pshavi.

Potential of organic agriculture in the target region

Organic Agriculture (bioproduction) is such system of agricultural production that contributes to the environmental protection and sustainable development – conservation of soil, ecosystem and wellbeing of people as of part of the environment.

The difficult landscape of the target areas, land-poor farms and agricultural management by traditional methods does not make it possible to produce large volumes of cheap products that will be competitive on the market. However, all the three target areas have a potential to produce smaller amounts of environmentally safe and quality bioproducts.

It should be mentioned that chemical inputs are used in the target area only for preventive measures and treatments in livestock sector and beekeeping. No chemicals are being used in pasture/grasslands and arable land, population apply manure for soil productivity improvement. Under such a situation, transition of local farms to organic management practices would not be difficult. Bio/organic production development will facilitate improvement of the socio-economic standing of the rural population and environmental protection in these areas. In addition, incomes of farmers in all the three target regions can be increased by sales of bioproduction.

A part of the population has a general understanding of bio/organic agriculture; none of them apply organic methods in their farms consciously (compost preparation, green manuring, mulching, etc.). They also do not have information on organic inputs for soil productivity improvement and plant protection.

Organic certification is a complex process, for which the local population is not prepared yet. In our opinion, there is a need to conduct educational work for raising awareness on organic agriculture, which is a major precondition for organic agriculture development and safe food production.

Based on the above, we can think about development of potential bioproducts in the regions, such as honey and other honeybee products, dairy products and potato.

The value chain development potential SWOT analysis

Strengths • Sufficient arable land, pasture and grassland areas; • Traditional production • High rating of the region-produced product in consumers; • Good geographical location (not far from Tbilisi); • Availability of forests and protected areas; • Preserved biodiversity.	**Weaknesses** • Population ageing; • Youth migration; • Absence of a veterinary service center; • Inaccessibility of veterinary medications; • Lack and inaccessibility of information on new technologies; • Outdated means of production; • Degraded breeds; • Shortage of sectoral knowledge; • Improper management of existing pastures and grasslands; • Non-compliance food safety requirements; • Inaccessibility of natural gas; • Poor condition of internal roads; • Outdated power supply systems in villages - or absence of such supplies in general; • Low level of medicinal service
Opportunities • Setting up a veterinary service center; • Introduction of artificial insemination; • Arranging innovation models; • Arranging productions in line with food safety requirements and their equipping with modern technologies; • Conduct of sectoral educational trainings; • Introduction of small-scale farming machinery for proper management of pastures/grasslands; • Arranging bio-gas installation; • Tourism development potential; • Agro-tourism development; • Value chain development potential for traditional production, Protected Geographical Indication products among them • Infrastructure development.	**Threats** • Reduction of the number of heads in livestock sector; • Loss of traditional knowledge; • Intensive use of chemical inputs; • Collapse of honeybee colonies; • Natural disasters; • Natural reduction and morbidity of population.

Cattle value chain analysis

General overview

According to statistics, productivity of cattle is low in the country. Lately, these figures have not been improved; on the contrary, average annual yield gradually reduces. The low yield is caused by many interconnected reasons.

In Khevsureti, Pshavi and Gudamakari, the majority of small-scale farms traditionally follow livestock breeding. They produce dairy products and meat. Most of the population keep from 1 to 25 heads of cattle, the major part of which is used for family consumption (dambalkhacho, milk, cheese, meat). In addition, there are also medium-scale farms that hold 10-80 heads of cattle and the major share of their produce is for sales. A large agricultural enterprise was built in Shuapkho (for 200 heads of cows) with the support of foreign and local investments, but is still out-of-operation. In the revenues from livestock sector, a share of dairy still prevails. Small- or large-scale farms specializing exclusively in meat production are rare in the given geographical area.

Environmental conditions

An extensive system of keeping animals prevails in small-size farms, during which all the operations are performed manually, using primitive implements.

Large-size producers intensively use mountain summer pastures and combined feed in winter. In summer, they move cattle to Alpine pastures, which are known for high nutritive values, returning it back to farms in the autumn, where feeding is carried out in stables.

The zoo-hygienic standards of dairy cattle breeding are severely violated in private large- and small scale farms in the region (buildings and structures, ventilation, stables, their parameters, dung pit, manure storage, personnel and milk production hygiene). Farmers are less aware of the required hygiene and sanitation rules. Implementation of food safety requirements is associated with large expenses. In general, the meeting of zoo-hygienic standards in cattle keeping and primary production conditions the obtaining of safe products, reliable for further processing. Stables should always be kept clean, as unhygienic environment will adversely affect productivity, which is greatly dependent on care and keeping conditions of animals.

Breeding

Khevsurian sub-breed of Georgian mountain cow is widely found in all the three target areas. This breed is characterized by high milk and beef productivity. To date, due to absence of breeding activity and uncontrolled crossing, productivity of the cattle found in villages is very low. It is known that milk compensation with feed greatly depends on the cow productivity level. Industrial cow breeds spend for equal level of milk yield 1.4-1.4 kg feed units per kg milk, whereas Georgian breed cows spend on average 0.9 kg feed units per kg milk, or approximately twice less. Thus, Georgian mountain breed cows are noted for high feed compensation, which significantly reduces milk cost.

One of the major causes conditioning milk productivity of cows is the generation factor. The genetic improvement rate in cattle breeding upon pure-breeds reaches 1.4-2%, or 45-60 kg per year, at

average milking yield of 3,000 kg per head. The local Georgian mountain cow rates amount in this case correspondingly up to17-23 kg (their average milking yield is 140 kg).

Artificial insemination, as one element of the technical progress, makes it possible to rapidly improve pedigree composition of the cattle, maximally utilize valuable traits of breeder bulls. Under present conditions, the breeding work on such breeds should be conducted generally through pure-breeding. The major attention shall be given to its preservation, reproduction, further improvement and rational use.

For the purpose of meat production growing, they address to industrial crossing of the Georgian mountain cow with beef breeds, such as Galloway, Aberdeen Angus, etc., which yields positive results. This will be especially useful upon using the produced technology in beef cattle breeding. In this case because of rather low live weight of a cow, the costs of its keeping will be completely ascribed to its calf intended for beef and it will significantly reduce the beef cost.

Animal feeding

It is imperative to follow the cattle feeding ratio for normal development of animals, as well as for their productivity. The daily diet shall include dry, juicy and combined feed. Together with feeding, of importance is the arrangement of drinking places. The problem is inadequate feeding – there is practically no big or household farm, where the feeding base is adequately arranged; proper attention is not given to the number of heads, composition and quality of feed.

Due arrangements of animal numbers and respective quality feed production would make it possible to increase production by 30-40% with the same amount of feed, e.g., if under poor feeding conditions 2-2.5 feed units are spent on the production of 1 kg milk today, in the case of quality feed it will take only 0.9-1.2 feed units.

As in other regions, the majority of farmers of the target region have no idea about adequate feeding – that different groups of animals (new-born calf, bull-calf, milking, beef or pregnant cow, bull) require different ratio; how nutritive value of feed is to be assessed, what kind of feed animals should take in different seasons of the years. As compared with several other regions of Georgia, the cattle of the target region population are generally provided with roughage. Farmers use mainly hay and rarely combined feed. The keeping of a head of cow will take two tons of hay. The local farmers buy generally hay in the lowland. Existing grasslands practically are not mowed, because the number of able-bodied population is rather small in the region, while the location of grasslands makes them inaccessible for large-scale farming machinery. A part of grassland is mowed manually with delay, which reduces nutritional value of the hay. Pasturing and storing up of feed for winter require much physical strength; therefore, this activity is generally carried out by men. Complete utilization of existing pasture/grasslands would be a good decision, for the process of reforestation has started on their large part.

Diseases

In the region, like in other municipalities of Georgia, many cattle diseases are found: infectious, invasive, non-transferrable, etc. Most of these diseases can be dangerous for the human health during care for the diseased animals and upon using their products. Productivity of the diseased cattle reduces dramatically, while the use of their milk or meat is entirely prohibited. Often, farmers have no idea how often and under what conditions preventive measures should take place. They are unaware that timely and correct healing of animals from internal and external parasites results in 20-30% productivity growth. Farmers do not know that after vaccination a wait period is obligatory - a

restriction of using animal produce for a definite time is required; they also are not aware of elementary rules and regularities of vaccinations; they do not know how to identify disease at the early stage and what technique to use for quick regain of productivity of the recovered cattle. The National Food Agency is responsible for mandatory cattle vaccination in the region and their identification.

Veterinary services /consultations

Purchase of necessary veterinary means is carried out in Tbilisi veterinary pharmacies. There is one veterinary specialist in the region (Pshavi), whose services are also used by the population of Gudamakari and Khevsureti.

Productivity

In addition to a correct selection of a breed, the beef cattle productivity is influenced by the age of cattle as well as sex, heredity, feed ratio, climatic zone, etc.

Local farms use for meat 2-year bull-calves, the weight of which is to a greater extent optimal. As mentioned, feeding greatly influences the cattle weight; at that, a 2-year animal more rapidly accumulates fat in the body. The most popular form is pasture fattening of cattle. In spite of the fact that stable feeding is far more efficient for animal fattening, in the target areas this practically does not take place, because small- and middle-scale farmers do not work on feed production. Beef cattle is sold on-site to resellers.

Since specialized beef cattle breeding is not developed in Georgia, the only beef production source is combined beef and milk breeds. Accordingly, when selecting a breed, farmers pay more attention to the potential meat productivity and beef quality index, than in in the countries with specialized beef cattle breeding. A regulation concerning the beef designated for placing on the market has been operating in country lately, according to which cattle should necessarily be slaughtered in an authorized slaughterhouse, where a veterinary specialist will examine both live cattle as well as beef, on the basis of which a respective certificate is issued by the National Food Agency, the so-called form #2. Otherwise the farmer would be able to deliver and sell beef on the market.

The cost of a bull-calf depends on the age and fluctuates from GEL 300 (of one-month age) to GEL 800 (of one-year age). From the age of 3 years, animals are considered as adults that can give calves and milk. For large-scale cattle farms the cost of feed per head makes GEL 500 on average (the greater part of these costs falls on the purchase of fodder and combined feed). The cost of necessary medication per head makes GEL 20/year on average. Average pay of workers, who oversee animals, makes GEL 240 per head/year. In small-scale farms that keep 1-15 heads, the farming activities are carried out by the household members themselves and hired labour is not used. Middle-scaled farms generally resort to hired labour in attending animals.

The main productive indices of milk productivity of cows are milk producing ability, content of fat and protein. Milk productivity depends on many factors – both hereditary and environmental conditions (care and keeping, feeding, lactation period, service period, dry period, calving period, light weight, age, state of health of cow, etc.).

Dairy production

In the target region, cows are milked manually. Small-scale farms, having 1-10 cows, do it on their own. Comparatively larger farms hire women as milkers. Mechanical milking devices are less popular in the locals because of their price. Another reason is that farmers share information that

mechanical milkers damage the animal udder, causing different disorders. It should be mentioned that during milking the milkers do not, as a rule, strictly abide by hygiene standards of making the primary product (milk).

In small-scale farms, women after milking get over to the making of cheese and other dairy products. Very popular in Pshavi is the making of the dambalkhacho – Protected Geographical Indication, while in Khevsureti and Gudamakari the production of cheese kept dry or in brine, the weight of which varies within 1.5-5 kg. Since milk is a perishable product, cheese is to be made in a short time after milking. The making of 1 kg cheese requires 6-8 litres of milk. The milk is warmed up to 32-38 degrees of C. Thereafter the enzyme pepsin (or rennet) is added to coagulate milk. It is necessary that milk temperature is retained until its full curding, for about 20-30 minutes. The obtained curd is pressed and the produced mass is put into forms. The produced cheese is placed in brine prepared in advance or is kept dry in a special vessel, by salting.

The dambalkhacho making technology is a unique tradition, passing from generation to generation. To make dambalkhacho, buttermilk is warmed up to 50–60°C to extract proteins. The warmed mass produces cottage cheese which is placed in fabric bags for squeezing. The squeezing of buttermilk continues for 10-12 hours. The well-squeezed mass is taken out from the bag, is salted to one's liking and mixed together well. Round cottage cheese balls are made from the intermixed mass, of 150-250 grams in weight; the balls are dried on a rack in a warm room protected from sunlight for several days. When the balls are well dried (become dense), they are placed into a clay pot, closed with a cover and stored in a cool place. The cheese ripening takes 1-2 months.

Product prices

The selling price of cattle beef is subject to significant changes during a year. It is the highest before holidays (New Year's Eve and Easter) and the lowest in the summer months. An exception is veal, which retains a relatively stable price during a year; at that, its price is GEL 2-3 higher than that of ordinary meat. The sales volume of beef and correspondingly the price reduce the fasting periods. Average annual selling prince of live cattle makes GEL 5-7 per kg. The wholesale price of beef is GEL 12-14 per kg, while the retail price – GEL 15-25 per kg.

Population sells milk and dairy products, especially cheese. Milk is generally not accepted, as for cheese, it is sold to middlemen, who themselves fix the selling price in towns. Cheese is often bought from farmers by dealers from Tbilisi, with whom they have long-standing relations and who know the cheese of what quality they produce. The price of dambalkhacho varies within GEL 20-30 per kg, that of cheese GEL 10-15 per kg.

Competition

Both producers and sellers definitely recognize priority of the quality of locally produced beef and dairy products against imported products or from other regions.

Sheep value chain analysis

Together with other circumstances, large natural pasture areas and soft climate contribute to the sheep sector development. Sheep bear well long-distance driving and are noted for high adaptability to environmental conditions, which allows for its raising in any ecological zone. The Tushetian breed of sheep prevails in the target region.

Sheep breeding considered as one of the traditional sector in all the three target regions; although, to date only several farmers are occupied by this activity, and that exclusively in the direction of mutton production. In summer the sheep are moved to Alpine pastures, kept in stables in the wintertime. Sheep wintering is one of the very serious problems, because shepherds lack winter cabins and sufficient feed. Based on the above problem, the sheep-breeding tradition becomes obsolete in all the three target regions. The price of lambs varies within GEL 150-200; sales take place on site to middlemen or on local market alive. In terms of quality, the product is highly demanded; a list of potential export markets has also widened: Azerbaijan, Lebanon, Libya, Saudi Arabia, the United Emirates, Iran, Iraq, and Jordan.

A growing interest in Georgian sheep breed in the Moslem World was caused by its similarity to that of Arabia Agassi. The price of Tushetian sheep is lower than that of Agassi and, therewith, the optimum weight of the Georgian sheep is within 30 kg, which is quite sufficient for a family and is economically profitable.

Wool production

According to the Value Chain Analysis Georgian Sheep Sector (ISET), the growth of the production of wool and cheese will greatly benefit the local shepherds. The shearing of sheep takes place in the spring and autumn, when sheep are in mountains. Currently, the amounts from wool sales constitute only 1 percent of the total income of the shepherds. Wool is exported to Turkey, Ukraine and Azerbaijan. One kg of unwashed wool price is within USD 0.30-50 that of washed one often amounts to USD 2.20. The low price of wool affects interest of the shepherds in collecting wool and bringing it to the lowland.

Milk production

Sheep are not milked in the region; the lack of labour is named as the main reason. Produce made from ship milk is in high demand.

Beekeeping value chain analysis

Acceding to statistics, honeybee production in the region is low and its figures have not improved lately. On the contrary, average annual income is gradually reducing, in spite of the fact that beekeeping is one of the most profitable sectors in the three target region; farmers produce only honey, the most part of which is sold on site. Population generally have 3-50 honeybee colonies. Stationary apiaries prevail here. Honey extraction takes place during July-August. The major problem in the value chain is outdated low-productive beehives and equipment used for extracting, processing and storage of honey. Given that the three target areas lack large-scale beekeepers, beekeeping care and maintenance do not require additional labour. The worth of a beehive with a colony makes GEL 300 here; the costs on necessary medication per colony make 12 GEL/year on

average; additional feeding, to take place in spring and autumn, generally by candy and sugar syrup, costs GEL 15 per colony. Also on a yearly basis the replacement of artificial combs takes place, the cost of which is GEL 10. These are the main costs the local beekeepers have to bear every year. The necessary equipment and medication they purchase on Tbilisi markets.

There is a honey processing plant in Magharoskari village, which, due to improper management, is currently non-functional.

Productivity

The Caucasian grey honeybee is spread in all the three target areas, the productivity of which per beehive makes 8-10 kg on average. The low-productivity is conditioned by both climatic conditions and lack of the experience in the sector.

Product prices

The selling price of honey is 20-25 GEL/kg, while its cost varies within GEL 5-7, which, as compared with other regions, is rather high.

Resources required for production

In order that farmers could increase productivity and improve product quality, existing apiaries should be equipped with modern beehives, which will be 10-frame, with a ventilated bottom, removable bee-entrance and warmed roof/cover, as well as with steel honey extractor, comb scrapers/knives, and honey storage reservoirs. Large-scale apiaries will also require a honey homogenizer and honey pouring equipment.

Medication. Ineffective medications, which adversely affect honey quality and sometimes lead to the death of colony, are generally used for honeybee treating. Medications are purchased in Tbilisi veterinary pharmacies.

Production of queen bees. Production of queen bees is absent in all the three target areas. Correspondingly, replacement of a queen bee in a colony is not taking place, which leads to the colony's weakening and low-productivity.

Competition

Producers and sellers as well as consumers definitely recognize superiority of the local honey over that of other regions.

Fish-farming value chain analysis

There is a small trout-breeding farm in Gudamakari, which is not operable today – the locals lack sufficient knowledge and experience for putting the trout-breeding farm into operation.

Productivity

A demonstration model can be arranged as small ponds, where during the whole year the farming of silver carp and mirror carp would be possible; also a trout-breeding farm, producing up to 2-3 tons per season could be arranged.

Product prices

The on-site selling price of trout is within GEL 10-12.

Resources required for production

The development of fish-breeding in the three target areas requires the creation of a proper infrastructure for trout and pond fish breeding farms, arrangement of a marketing and distribution chains.

Sales. Based on the geographical location of all the three target areas, producers will not have problems with the product sales, as demand for it is rather high. The main consumers will be existing family hotels and regional restaurants.

Recommendations

Recommendations are elaborated for each target region, individually and they are based on the analysis of the study results.

Gudamakari

Beekeeping

The first-stage of the development of the beekeeping sector in Gudamakari will require:

- Highly productive beehives;
- Modern honey extractor;
- Honey storing reservoirs (allowed for contact with food);
- Small-scale working implements (scraper, comb knife, smoker and overall);
- Sectoral trainings and study visits.

The listed activities will facilitate the beekeeping sector development and enable small-scale beekeepers to increase the production and incomes.

Livestock sector

Based on the current situation, the primary production development in Gudamakari requires:

- Increasing the livestock population (beef and dairy) to ensure surplus production;
- Introducing the practice of small-scale mechanization (motor mowers) for hay production;
- Introduction of quality haymaking practice, implying the proper time-frame for grass cutting and proper storage of hay;
- Sectoral trainings and study visits.

The above-mentioned activities will enable small-scale farmers to increase primary production and improve awareness, which is a precondition for setting-up in Gudamakari family-type small-scale milk processing units.

Fish-farming

- A small demonstration trout-breeding farm could be arranged, which will operate seasonally and supply restaurants and family hotels in Pasanauri Settlement;
- Sectoral trainings and study visits.

Khevsureti

Beekeeping

The beekeeping sector development in Khevsureti requires:

- Highly productive beehives;
- Modern electric honey extractor;
- Honey storing reservoirs (allowed for contact with food);
- Small-scale working implements (scraper, comb knife, smoker and overall);
- Setting-up a small demonstration apiary and processing unit in line with bio-standards and equipped with beehives of different design to demonstrate their advantages to local beekeepers;
- Setting-up a small-scale honey processing unit in line with bio-standards and adequately equipped (electric honey extractor, honeycomb scraper, filter and compact honey dozer). The processing unit should comply with food safety requirements and make the final product (canned, labelled honey). The processing unit shall also serve local beekeepers;
- Beekeepers need training in proper use of the delivered equipment as well as sectoral training and study visits.

The above-mentioned activities will facilitate in Khevsureti the increase of honey production and beekeepers' incomes.

Livestock sector

Based on the current situation, it is important:

- Introducing the practice of small-scale mechanization (motor mowers) for hay production;
- Introduction of quality haymaking practice, implying the proper time-frame for grass cutting and proper storage of hay;
- Equipping a farm with a milking unit, which will reduce time expenditures and ensure hygiene of produced milk;
- Establish small-scale model of milk processing unit, introducing food safety standards in compliance with Technical Regulations "Simplified Procedure for Food/Feed Hygiene", in order to ensure product safety. Said Regulations concern traditional production and enterprises operating in the mountain region, according to which both milk acceptance and processing can take place in one room. Production space should provide a possibility of cleaning, should be provide with cold and hot water supply canalization system
- Necessary equipment for small-scale milk processing enterprises: separator, cheese forms, cheese boilers, tare washrooms, working table;

- Setting up a veterinary service center in Kveda Pshavi, where local population will be able to buy veterinary medications;
- Sectoral trainings and study visits.

Fish-farming

Khevsureti highlands climatic conditions exclude development of fish-breeding there; a demonstration model can be arranged in below villages of Khevsureti as small ponds where during the whole year the farming of silver carp and mirror carp would be possible, which will help the local population in getting acquainted with the carp farming methods. There many family hotels in Khevsureti, where fish will be in high demand.

Pshavi

Beekeeping

The beekeeping sector development in Pshavi requires:

- Establishing production of royal jelly and queen bees, for which purpose deck beehives, larva feeding plates, queen bee bowls, cells, mini-nucleus hive, air grid, royal jelly reservoirs and fridge are required;
- Bee pollen production for which pollen catchers and a drier are required;
- Bee venom production, requiring venom taking cassettes and a block unit;
- Modern highly productive beehives;
- Honey storing reservoirs (allowed for contacting food;
- Small-scale working implements (scraper, chisel, smoker and overall);
- Setting-up a small demonstration apiary in line with bio-standards;
- Setting-up a small-scale honey processing unit in line with bio-standards and adequately equipped (electric honey extractor, honeycomb scraper, filter and compact honey dozer). The unit should comply with food safety requirements and make the final product (canned, labelled honey). The unit shall serve local beekeepers;
- Beekeepers will undergo a corresponding training in proper use of the delivered equipment as well as sectoral training and study visits.

Livestock sector

- Introducing the practice of small-scale mechanization (motor mowers) for hay production;
- Introduction of quality haymaking practice, implying the proper time-frame for grass cutting and proper storage of hay;
- Equipping a farm with a milking unit, which will reduce time expenditures and ensure hygiene of produced milk;
- Setting-up a demonstration farm in line with bio-standard requirements, which will be fully equipped with modern technologies, such as a milking unit, drinking places; introducing artificial insemination for breeding purposes; feeding diversification;
- Introducing food safety standards in small-scale milk processing in compliance with Technical Regulations “Simplified Procedure for Food/Feed Hygiene”, in order to ensure product safety. Said Regulations concern traditional production and enterprises operating in the mountain region, according to which both milk acceptance and processing can take place in one room. Production space should provide a possibility of cleaning, should be provide with cold and hot water supply canalization system
- Necessary equipment for small-scale milk processing unit: separator, cheese forms, cheese boilers, tare washrooms, working table;

- Setting up a veterinary service center in Kveda Pshavi, where local population will be able to buy veterinary medications;
- Sectoral trainings and study visits.

Fish-farming

Climatic conditions in Kveda Pshavi give a possibility of setting up a model trout-breeding farm, which will allow the local population to get acquainted with characteristic features of trout farming, deepen their knowledge and arrange own fish-farm. Based on the tourism potential, demand for fish on the part of local family hotels is big.

Additional recommendations

- By applying the resources available in all the three regions a bio-gas installation can be arranged in all the three target regions, which will have a multifunctional use: the gas produced as result of manure and organic waste processing will be used as a source of additional energy in households, while the decomposed manure (final product) is used for soil fertility improvement;
- Trainings – introduction to organic agriculture;
- Consultations & training – work on Protected Geographical Indications Product development – producer training, specifications upgrade, internal control system introduction, certification and marketing (e.g. Dambalkhacho).

Annexes

Annex 1. Questionnaire

Questionnaire

1. Filling in date/place

Filling in date	Sakrebulo	Village

2. Surveyed beneficiary's details

First name, surname	Age	Contact phone	Education	Resident	
				Permanent	Seasonal

3. Family structure/experience of the beneficiary's family

Family member's first name & surname	Age	Education	Experience in agriculture	Resident	
				Permanent	Seasonal

4. Family incomes

Source of income	Average annual income
From public service	
From business	
From agriculture	
Social aid and/or pension	
Money transfers	
Other	
Total	

5. What agricultural resource do you have?

Resource	List, number
Arable land (ha)	
Pasture/grassland (ha)	
Farming machinery	
Agricultural implements	
Auxiliary premises	
Other	
Other	
Other	
Other	

6. Species/breeds available on farm, their number, productivity

Agricultural sector	Number, species/breed	Primary raw material amount (year	Saleable products, number/amount	Average annual income (GEL)
Dairy cattle husbandry				
Beef cattle husbandry				
Sheep breeding				
Beekeeping				
Fish farming				
Other				

Please indicate what feed do you use on your farm and at what regularity?

_____

_____

7. What agricultural services/means are accessible in the region?

Fertilizers ☐ Seed material ☐
Plant protection agents ☐ Farming machinery ☐
Agricultural consultations ☐ Veterinary drugs ☐
Veterinary service ☐ Slaughter ☐
Other _____ ☐ Other_____ ☐

8. Value chain-engaged resources and services

List	Accessibility	Comment
Suppliers of agricultural circulating assets		
Veterinary services		
Farming machinery services		
Cooperatives		
Buyers, processors and distributors		
Extension service, advisory services		
Financial services		
Programs and projects		

9. Access to markets (on what agricultural markets do you sell your products?)

Local/regional	National/export	Middleman (dealer)

10. Do you supply your products to local hotels, guesthouses, restaurants?

☐ Yes ☐ No

If no, what is the reason?

_____

_____

11. What infrastructure is available in your region?

Irrigation	☐	Electric power	☐
Central road	☐	Natural gas	☐
Road leading to agricultural plots	☐	Farm products delivery center	☐
Slaughter	☐	Other_____	☐

Comment _____

12. What agricultural sector would you wish to develop in case of getting necessary financing and what resources do you need for that?

Sector	Resource	Product
Dairy cattle husbandry		
Beef cattle husbandry		
Sheep breeding		
Beekeeping		
Fish farming		

13. Factors interfering with the development of agricultural sectors

Interfering factor	Negative effect
Lack of irrigation	
Lack of road	
Lack of electric power	
Lack of natural gas	
Lack of finances	
Lack/shortage of l\knowledge/information	
Lacks of product sale markets	
Other	
Other	

14. What agents (vet drugs, plant protection agents, fertilizers) do you use on your farm and where do you buy them?

Sector	Used agent	Place of purchase
Arable land		
Pasture/grassland		
Cattle breeding		
Sheep breeding		
Beekeeping		
Fish farming		

15. Did you hear about bio/organic agriculture?

☐ Yes ☐ No

If yes, please indicate what methods do you use and whether you are interested in organic agriculture?

_____
_____
_____

16. Does division of labour between men and women take place in carrying out agricultural activities?

☐ Yes ☐ No

If yes, indicate in what activities are engaged men and in what activities – women.

Men	Women

17. Are in your village the persons, who are more actively engaged in the settlement of agricultural problems and who enjoy authority in the village? Name them

First name, surname	Contact information

18. How many operating hotels/guesthouses are there in your village, and what are the reasons if such are absent?

_____

19. Do you have the status of an entrepreneur?

Status of entrepreneur	
Legal person	
Natural person	

20. Your monetary participation in the project

Please indicate your monetary participation in case you are engaged in the project implementation (GEL)_____

Annex 2. List of the surveyed

Gudamakari

#	First name, surname	Age	Resident		Village	Sakrebulo	Cattle breeding		Sheep breeding	Beekeeping	Fish farming
			Perm.	Seas.			Dairy	Beef			
1	Eter Bekauri	59	1	0	Zanduki	Gudamakari	6	2			
2	Teona Tsiklauri	37	0	1	Zanduki	Gudamakari	10				
3	Valerian Bekauri	70	1	0	Gamsi	Gudamakari	**20**				
4	Malkhaz Tsiklauri	53	1	0	Chokhi	Gudamakari		3	40		
5	Gocha Bekauri	38	1	0	Gamsi	Gudamakari	5	10	7	4	
6	Bazi Bekauri	53	1	0	Gamsi	Gudamakari	5	8	300		
7	Nodar Tsiklauri	68	1	0	Kitokhi	Gudamakari	3				

Pshavi

#	First name. surname	Age	Resident		Village	Sakrebulo	Cattle breeding		Sheep breeding	Beekeeping
			Perm.	Seas.			Dairy	Beef		
1	Niko Madurashvili	80	X		Udzilaurta	Shuapkho	3			4
2	Somelji Tvarelashvili	53	X		Shuapkho	Ukanapshavi				40
3	Marekhi Udzilauri	37	X		Tkhiliana	Shuapkho	4	5		
4	Goderdzi Kochiashvili	55	X		Shuapkho	Ukanapshavi	6	2		55
5	Ioseb Jamanishvili	77	X		Shuapkho	Shuapkho				2

6	Lela Tsotsolauri	31	X		Tkhiliana	Shuapkho	3	2		4
7	Zurab Ochiauri	54	X		Shuapkho	Ukanapshavi				3
8	Spridon Gedekhauri	71	X		Shuapkho	Ukanapshavi				20
9	Vakhtang Chitoshvili	75		X	Tkhiliana	Ukanapshavi	2	2	1	10
10	Tekle Badrishvili	91	X		Shuapkho	Pshavi				2
11	Tamar Chokheli	60	X		Shuapkho	Ukanapshavi	8	1		20
12	Martha Jamanishvili	49	X		Shuapkho	Ukanapshavi				3
13	Nanuli Mchedlishvili	57	X		Shuapkho	Ukanapshavi				3
14	Juansher Iarajuli	42	X		Shuapkho	Ukanapshavi	5			5
15	Natela Lomniasihvili	62	X		Shuapkho	Ukanapshavi	5			4
16	Pikria Tselauri	40	X		Vakissopeli	Ukanapshavi	2	4		150
17	Tariel Tsolikauri	77		X						20
18	Ketevan Chincharauli	24		X	Vakissopeli	Ukanapshavi				15
19	Vazika Jabanishvili	21	X		Chidali	Ukanapshavi	13	12	10	80
20	Meredi Jabanishvili	58	X		Vakissopeli	Ukanapshavi				
21	Marina Razikashvili	62	X		Chargali	Magharoskari				8
22	Gocha Razikashvili	53	X		Chargali	Magharoskari				80
23	Lekso Khadiashvili	27	X		Chargali	Magharoskari	6			
24	Nika Garsevanishvili	30	X		Chargali	Magharoskari `	13	7		10

25	Gulsunda Turmanauli	48	X		Magharoskari	Magharoskari	4	2		
26	Lali Gabniashvili	49	X		Khiliana	მაღაროსკარი	2			50
27	Salome Kakabrishvili	48		X	Magharoskari	Magharoskari				10
28	Vasil Nakeuri	49	X		Kalilo	Magharoskari	2			
29	Nana Badriashvili				Kalilo	Magharoskari				
30	Maia Suprishvili				Kalilo	Magharoskari				

Khevsureti

#	First name, surname	Age	Resident		Village	Sakrebulo	Livestock breeding		Sheep breeding	Beekeeping
			Perm.	Season.			Dairy	Beef		
1	Nodar Arabuli	54	1	0	Tsinkhado	Barisakho		60		
2	Ialno Arabuli	41	1	0	Korma	Barisakho	15			10
3	Toma Arabuli	62	1	0	Barisakho	Barisakho	2	3		
4	Zurab Chincharauli	38	1	0	Gudani	Barisakho				
5	Dato Likokeli	48	1	0	Cakisopeli	Barisakho	25			15
6	Natela Likokeli	40	1	0	Barisakho	Barisakho	4	8		
7	Datvia Likokeli	48	1	0	Kobulo	Barisakho	5	7		

8	Tristan Arabuli	58	1	0	Barisakho	Barisakho	4			
9	Shota Arabuli	61	1	0	Korma	Barisakho				
10	Goderdzi Chincharauli	46	1	0	Gudani	Barisakho	3	3		
11	David Chincharauli	28	1	0	Gudani	Barisakho				6
12	Leila Abramishvili	56	1	0	Gudani	Barisakho	4			
13	Giorgi Chincharauli	61	1	0	Gudani	Barisakho	2			30
14	Aluda Aludauri	44	0	1	Khakhmati	Barisakho	20			15
15	Shota Aludauri	56	1	0	Khakhmati	Barisakho				
16	Shalva Ketelauri	65	0	1	Biso	Barisakho		34		
17	Bada Aludauri	46	0	1	Khakhmati	Barisakho	6			
18	Aluda Aludauri	43	0	1	Khakhmati	Barisakho				30
19	Marine Gigauri	52	1	0	Korma	Barisakho	5	5		20
20	Grisha Arabuli	59	1	0	Korma	Barisakho				12
21	Berdia Arabuli	31	1	0	Korma	Barisakho	3			
22	Guram Arabuli	53	1	0	Datvisi	Barisakho	10	15		5
23	Mzekala Arabuli	40	1	0	Barisakho	Barisakho	4			

Annex 3. Information about Gudamakari villages

#	Villages	Family names	Number of population (234 persons)	Ancient rural settlements
1	Bakhani	Kavtaradze, Patashuri, Tsiklauri (Chobalauri)	10	Atnokhi, Kerachi, Mazitiani, Zemo Kitokhi, Lideli, Chobalauri, Zemo Chokhi, Chochokhi, Bursachiri
2	Dikhcho	Tsiklauri (Tloshiauri)	3	
3	Lu`tkhubi	Tsiklauri (Tloshiauri)	23	
4	Tsnamkhari	Aptsiauri	10	
5	Makarta	Tsiklauri (Tloshiauri)	40	
6	Kitikhi		25	
7	Didebani (Goganaurta)	Bekauri (Didebani)	9	
8	Zabduki	Tsiklauri (Tloshiauri)	22	
9	Gamsi	Bekauri (Sharvaniani, Bachomiani, Oblianni, Tamaziani, Turkiani, Baiani)	20	
10	Cholhi	Chokheli	17	
11	Torelaani	Aptsiauri, Tsiklauri (Tamniauri)	16	
12	Boseli	Tsiklauri (Kharkhelauri, Bubunauri)	2	
13	Dumatskho	Aptsiauri, Tsiklauri (Kharkhelauri, Bubunauri)	10	
14	Chobalaurni	Aptsiauri, Tsiklauri	2	
15	Pakhviji (Pkhaeti)	Tsiklauri (Igriauli)	3	
16	Sachalischala	Tsiklauri (Igriauli)	1	
17	Totiaurni	Chokheli	16	
18	Sijanani	Tsiklauri (Igriauli)	1	
19	Sakerpo	Pitskhelauri	2	
20	Bakurkhevi	Pitskhelauri	2	

Annex 4. The villages and piopulation of Ukana Pshavi and Magaroskari communities

Ukana Pshavi Community villages and population

#	Ukana Pshavi Community villages	Population (87 persons)	Comment
1	Shuaphkho	35	Nine villages (Akhadi, Chidali, Tsitelaurta, Kutkhi, Misriantkari, Vankhevi, Eliagza, Bilalaurta, Arakhija) are deserted
2	Akhadi	0	
3	Gogolaurta	8	
4	Matura	1	
5	Muko	12	
6	Udzilaurta	15	
7	Ukanapshavi	9	
8	Tsabaurta	1	
9	Chicho	2	
10	Khoshara	4	

Magharoskari Community villages and population

#	Magharoskari Community villages	Population (531 persons)	Comment
1	Apsho	1	Four villages (Arbachkhani, Sashevardno, Kalilo, Kopcha) are deserted
2	Gometsari	68	
3	Gudarakhi	2	
4	Uno	1	
5	Kanatia	18	
6	Katsalkhevi	63	
7	Khiliana	22	
8	Kuchecha	5	
9	Magharoskari	221	
10	Migriaulta	8	
11	Sharakhevi	11	
12	Chargali	69	
13	Tsipnari	24	
14	Khomi	18	

Annex 5. Information about Khevsureti villages

#	Barisakho communities	Villages (526 persons)	Number of population
1	Barisakho	Kvemo Barisakho, Zemo Barisakho, Korsha	Most villages are deserted 526 inhabitants (167 households)
2	Gveleti	Motsmao, Sakhile, Datvisi, Gveleti, Achekha	
3	Chirdili	Chirdili, Buchukurta, Uakanakho, Liphoda, Ubani, Okherjhevi	
4	Tskalsikiti	Ghelisvake, Kmosti, Roshka, Blo	
5	Gorsheghmi	Ukankhadu, Tsinkhadu, Atabe, Batsaligo, Chkhuba, Akneli, Zeistecho	
6	Gudani	Gudani, Ghuli, Chie, Biso, Khakhmati, Chormeshavi, Zenubani	
7	Likoki	Akusho, Chalisopeli, Kobulo, Keo, Kartsaulta, Bogchvilo	