Baseline study for Sisian district of Syunik region, RA

BSC Business Support Center

Report

March 2017

Integrated Biodiversity Management, South Caucasus

Baseline study for Sisian region of Syunik Region, RA

BSC Business Support Center
Report

Executive Summary

Report Objective

This report was developed by BSC Business Support Center (hereinafter referred to as **the Consultant**) for German Society for International Cooperation (hereinafter referred to as **GIZ**) to make an initial assessment upon the situation in Sisian sub region of Syunik region targeted in the framework of **"Integrated Biodiversity Management, South Caucasus"** project (hereinafter referred to as **Project**). 9 communities of Sisian sub region are especially focused within the Project: - *Noravan, Shaki, Tolors, Brnakot, Ashotavan, Tasik, Nzhdeh, Salvard and the enlarged community of Gorayk with Gorayk, Tsghuk, Sarnakunq and Spandaryan* settlements (set.) in it (hereinafter referred to as **the Pilot communities**).

The assessment is based upon studies of the following basic fields:

- ✓ Environment;
- ✓ Socio-economic situation;
- ✓ Land use;
- ✓ Natural resources and their management (practices and legal framework),
- ✓ Key projects and interventions implemented.

2011 – 2016 years were initially set as the effective period of the data collected.

In the report made up below you can find dynamics of significant indicators of social field, economy, natural resources and other related fields in Syunik region with a special emphasis on Sisian sub region and the Pilot communities.

The report intends to answer some key questions such as:

- ✓ What fields need improvement?
- ✓ What gaps should be focused on and fulfilled during the Project?
- ✓ What core habits have to be uprooted for further prosperity of the Pilot communities?
- ✓ What infrastructures are missing for drastic alterations in the Pilot communities?

Key findings and Conclusions

Just to make a brief sense of the overall situation in Syunik region focusing on Sisian sub region, it is worth mentioning that this area is quite a good reserve of human and natural resources with a broad potential of developed enterprises and balanced livelihood.

Availability of minerals and active mining industry contributes to solving employment issues partially, although ecology is still facing high risks due to development of this economy branch.

In terms of living standards, it should be stated, that average nominal wages are even exceeding the Republic Average calculated annually in our country.

Regarding gender, it is quite appreciable to note, that here the situation is relatively balanced and involvement of women in agriculture as well as in general socio-economic life in terms of

working in state and private enterprises is quite promising, ensuring 30 -50 % throughout the region and the Pilot communities.

It is use not to forget, that being focused by a variety of state, national and international projects, tangible improvements are observed in the fields of natural resources management, e.g. pasture management through proper monitoring model establishment in 24 communities and with success cases in at least 7 Pilot communities. This also might encourage other regions and regions to take an example and involve investments for pasture management to bring the best practice of Syunik into their routine for the overall development of agriculture, ecology and hence economy overall.

However, there are still gaps hindering the normal temp of development of the region, which need more accurate and consistent solutions and constructive interventions.

In terms of natural resources management, forest resources maintenance should also be of a huge significance for the region. Considering the fact that the latest updates of Sisian Forestry were implemented in the late 1980s, particular measures should be taken by national and international organizations to get a more realistic updated image of the situation and act correspondingly for rational use of the resources.

In terms of socio-economic situation, these gaps can refer to milk and meat consumption/collection points, prices, fodder quality for a competitive agriculture products, construction of roads for easing the access to farther markets.

As for cultural life, most communities need better conditions for pre-educational and secondary educational institutions, need construction or reconstruction, and what is more essential, quality improvement for cultural centers and educational institutions.

As for the work done, regarding collection of secondary data, we should by all means state, that electronic data such as web-sites, reports and any publications are not standing out and astonishing with their richness and can be considered less helpful than the same categories for international data. Besides, existing data is not properly standardized and from the same source it is quite hard to derive similar data for two communities, regions or other administrative units at the same time. This demonstrates the insufficient performance of municipalities and regional administrations (the issue is common for almost all the country) in terms of transparency and distinctness.

The same issue is observed regarding primary data in community registers, which are supposed to be the most reliable sources for any kind of information upon the community life and people. Here there is a huge problem of maintaining archive documents, lack of use of high technologies (even though all the pilot communities have been beneficiaries of a corresponding project) and tendency of illiterate calculations even of very responsible data (e. g. to be shared with the Armenian National Statistics service).

Contents

List of Tables

List of Figures

VIII

List of Pictures

List of Abbreviations and Acronyms

Cm	centimeters
edu.	educational
Ha	Hectares
Km	kilometers
M	Meters
mln.	Million
set.	settlement (s)
ths.	thousand
AGP	allowable grazing pressure
APIU	Agricultural Project Implementation Unit
CARMAC	Community Agricultural Resource Management and Competitiveness CARMAC
CU	cattle unit
LLC	Limited Liability Company
OJSC	Open Joint-Stock Company
PCI	pasture condition index
RA	Republic of Armenia
SDA NGO	"Strategic Development Agency" Non-governmental Organization
SNCO	State non-commercial institution
ToR	Terms of Reference
UCO	Universal Credit Organization

X

1. INTRODUCTION

1.1 Methodology and tools

The procedure of the research went through two key phases based on the data source: A. Desk study and document review for secondary data and B. Key informant interviews for primary details.

Desk study and document review. Through desk study and document review the Consultant collected secondary information about the thematic areas mentioned in the Terms of Reference (ToR) for each target region/sub-region and community, as well as on key projects and reports generated in the relevant fields. Along with the review of regional strategic papers, policies and legal documents, the statistical reports were also analyzed to understand the current environment and socio-economic situation in these regions/communities. The statistical and other analyses were based upon the reports and publications provided by:

  ➢ National Statistical Service of Republic of Armenia,
  ➢ Regional Municipality of the targeted regions/regions
  ➢ Other state and non-state institutions, Ministries and international organizations.

Key informant interviews. The Consultant conducted individual interviews with key informants and stakeholders (Municipality and Community leadership of targeted regions/sub-regions and communities, etc.) through personal meetings and deep interviews. Particularly, the key interviewees of the primary research phase were the community mayors and/or representatives of mayor's offices. The list of the respondents follows in the table below:

Table 1: Key informants of Sisian sub region

	Community	First Name, Last name	Position
1	Ashotavan	Armen Beglaryan	Mayor
2	Brnakot	Atom Arakelyan	Mayor
3	Gorayk	Arustam Arustamyan	Mayor
4	Nzhdeh	Nelli Tangyan	Mayor's Deputy
5	Noravan	Slavik Papyan	Mayor
6	Salvard	Vardan Mesrobyan	Mayor
7	Sarnakunq (set.)	Manuchar Mkrtchyan	Administrative representative[1]
8	Shaki	Vahan Ghazaryan	Mayor
9	Spandaryan (set.)	Varuzhan Vardanyan	Staff Secretary
10	Tasik	Meline Aghayan	Staff Secretary
11	Tolors	Marat Arakelyan	Mayor
12	Tsghuk (set.)	Hakob Khachatryan	Staff Secretary

---

[1] Was replaced just a week after the interview

For ensuring high efficiency, quite competent and intelligent field workers from Syunik region were selected and instructed in details based upon the Guideline[2] developed initially. During the interviews they made detailed notes as well as made some voice recordings on spot, later on sharing the collected information in written in electronic version. They were coordinated during all the fieldwork period, received intensive feedback upon materials delivered systematically.

Picture 1: Interview in Shaki

For crosschecking the secondary data collected and analyzed as well as revealing information missing in public materials, archive documents for 2011 – 2016 years[3] were also revealed during the visits to the pilot communities. Community registers for population and animals, maps for land types and pasture management as well as other related documents and materials were scanned and received in the mayor's offices.

Finally, all the data received from primary and secondary sources, was accurately combined, estimated in terms of feasibility, analyzed and presented in this report through text paragraphs, tables, charts and illustrations, pictures and smart art.

---

[2] See in Appendix 1
[3] Only for the communities where the responsible people had access to the documents: in several communities this was impossible due to redecoration of the office, personnel changes, improper discipline

1.2 General description of Syunik region in terms of environmental, socio-economic and other criteria

Syunik is one of 10 regions of the Republic of Armenia (RA) located in the south of the country. It occupies 4,506 km^2 which makes 15.1 % of total area of the RA. As of January 1, 2016 it has a population of 139.4 thousand (ths.) people which makes 4.7 % of total population of the RA. 94.0 ths. out of its population is urban, yet rural population makes 45.4 ths. The density of population is 34 people per square kilometer. The region capital is Kapan, the largest city of Syunik region and the 4th largest town in Armenia.

There are 66 rural and 6 urban communities in Syunik region, while total number of settlements makes 135, 105 out of which are borderline, mountainous and high mountainous ones.

The total length of its border is 472 kilometers (km). It has a 42-km-long state border with the Iranian Islamic Republic in the south and a 110-km-long state border with the Republic

SYUNIK PROVINCE

Scale model 1:200 000

Picture 2: Map of Syunik region

of Azerbaijan (self-governed region of Nakhijevan) in the west. In the east, it has a border with Artsakh and in the north with Vayots Dzor region of Armenia.

The highest summit of the region is Kaputjugh (3,906 meters (m) high) and the lowest point is Meghri gorge (Araks valley, 380 m). It's also famous for its Baghats, Khustup, Mets Ishkhanasar and Aramazd summits.

One of the most attractive places in Syunik region is medieval Armenian architecture monument Tatev monastery complex (IX century) where in 1390-1435 the famous Tatev university was operating.

In 2010 the longest ropeway of the world "Tatever" was put in action (maximum height 380 m length 5.7 km) which passes through Vorotan river canyon, stretches over mountains and reaches from Halidzor village to Tatev monastery complex.

In 2012 the unique of its type and size suspended bridge was launched, which connects two sides of the Old Xndzoresk (Ghandunts Nov and Nerkin Tagh). The bridge stretches more than 160 meters from one side of the huge valley to another. It is 63 m high from the deepest place. The mass of the bridge depends on strong and taut ropes (suspension bridge) that is why the bridge is swinging when you walk in it, and for this reason people call it a "Swinging bridge".

Shaki waterfall, the biggest waterfall (18 m) of Small Caucasus Mountains is situated in 6 km distance from Sisian town.

Among the cultural and historical monuments of the region the most famous are the group of monuments of "Zorac Qarer", the castles of Baghaberd, Halidzor, Vorotnaberd, the monasteries of Tatev, Vorotna, Bgheni, the monastic complexes of Vahanavank and Eritsavank, the mausoleum monument of Aghitu, the mausoleum hill of Sisian since the neolith era, the little church of Meghri and the defensive towers of the city.

"Zorac Qarer" group of monuments is situated 3.2 km north from Sisian city. It is also called Qarahundj and it's a creation of megalithic era (II millennium B.C). "Zorac Qarer" is one of the famous ancient megalithic complexes and observatories; it is a stone-aged certificate of Indo-European civilization, whose mysteries are not discovered by the science yet. "Zorac Qarer" is often called "Armenian Stonehenge" considering that there is a megalithic observatory there in researcher's opinion.

Syunik's valleys and rich pastures are especially suitable for livestock, and the river valleys are good for farming.

More details on the economy and all related fields in Syunik and particularly in Pilot communities are described further on.

1.3 Brief Historical Review

Syunik was well-known for its two names – Syunik and Sisakan. According to "Ashkharatsuyts" or so-called "Geography" by Anania Shirakatsi, Syunik was the 9th state of the Great Hayq, stretching in the north-eastern part of the Armenian mountain range and bordering Ayrarat, Vaspurakan, Artsakh, Gugark and Utiq states.

Syunik state occupied more than 15,000 km^2 and had 1,008 villages, 43 fortresses, 48 monasteries. The highland was connected to the external world by ghats and impassable roads.

In historical factsheets Syunik is often recalled as a powerful ministry. In 987 the Syunik Kingdom was first announced by the governor Smbat. The kingdom of Syunik is also famous as Baghats or Kapan Kingdom. The capital of the Kingdom first was Shaghat, and in the late X century Kapan replaced it as a capital town.

Sisian town (as of the beginning of 2016 comprised 14 856 ths. person), is situated in 206 km distance from Yerevan and 110 km from the centre of the region economy is mainly specialized in mining industry, in particular, non-metal mineral other produce production and manufacturing industry, of which food and beverages, textile and sewing produce productions.

In the Middle Ages Sisian used to be called Syuni, and in 1930s it was known as Sisakan. Today's Sisian sub region mostly occupies the area of Tsghuk state of historical Syunik. The name of Tsghuk state goes back up to the VIII century B.C. in written sources.

2. ENVIRONMENT

2.1 Physical-Geographical description and specifics of Syunik region

Syunik region of the RA lays on the Zangezur nature area, which includes the basin of upper and average flows of the Vorotan and Voghji rivers and the eastern slopes of the Zangezur, which is the highest after the South Caucasus in the Caucasus mountain range.

The RA Syunik region is occupying an important strategic and geographic political position, having rich resources of natural raw materials, industrial big capacity and being one of the biggest administrative and economic regions of the republic, at the same time is remained as one of not enough inhabited and economically developed regions, which is connected with a big distance from the capital and lack of alternative modes of transport communication.

Syunik is a mountainous region, mainly covered with thick green forests. The Zangezur Mountains occupy most of the territories of Syunik. The highest mountain of the region is the Kaputjugh (3,906 m), and the lowest place is the canyon of Meghri (Araks valley- 380 m).

Syunik has unique nature, tick forests, narrow gorges, rich fauna, historical and cultural monuments. Many of the forests in Syunik are protected by the government.

The biggest world sycamore relict park is situated in the Tsav river basin at the south-east of Kapan town that occupies 120 hectares (ha) territory, the second by its square over the world. The age of some trees at this unique park is over hundred years reaching a diameter of 3 m, and the height of 30-35 m. It is bordered by Mtnadzor polling station of Shikahogh state reserve, which is known for its virgin nature, landscapes and fauna. The area of the "Shikahogh" reserve is situated in 25 km from the town.

Nowadays Sisian sub region is popular for its picturesque places and amazing nature, where Shaki waterfall, Vorotan Gorge, mountainous lakes and reservoirs should be especially noted.

Below in the table you can find the basic description of each community and settlement included in the Pilot communities:

Table 2: Sisian sub region, geography of the Pilot communities

	Distance from the region capital, km	Distance from Sisian, km	Altitude high above the sea level, m
Gorayk	127	30	2,140
Tsghuk	123	25	2,220
Sarnakunq	120	22	2,170
Spandaryan	116	19	2,150
Brnakot	111	7	1,700
Tasik	117	13	1,740
Shaki	98	6	1,720
Tolors	112	8	1,720
Salvard	123	19	1,940
Ashotavan	112	8	1,750
Noravan	99	12	1,700
Nzhdeh	128	24	2,000

It's worth mentioning that the multi-settlement Gorayk was formed in September 2016 in the result of enhancement of 4 communities of Syunik region upon the reformed Law on

Administrative Devision of the RA (June 17, 2016). It includes Gorayk, Tsghuk, Sarnakunq and Spandaryan settlements.

As for the central town of Sisian sub region - Sisian, the distance from the region capital Kapan is 115 km, from the capital of the RA – 217 km, and the altitude above the sea is 1,600 m.

In all the Pilot communities livestock, horticultrue and farming are the main directions of agriculture.

2.2 Natural-climate conditions and variation: influences on socio-economic situation

The climate in Sisian sub region is cold and temperate which is characterized by temperate and cold winters and arid summers.

Vegetation period is 180 days.

Winter in Sisian is long-lasting. The height of snow layer is 20 – 50 centimeters (cm). Constant snow layer remains for 3 – 4 months. The temperature here average in January is – 4.8°C, the annual average is 6.9 °C, and the absolute minimum is – 34 °C.

Average temperature	2°C (35,6°F)
Minimal temperature	-18°C (-0,4°F)
Maximal temperature	20°C (68°F)
Day average temperature	6°C (42,8°F)
Night average temperature	2°C (35,6°F)
Day minimal temperature	-11°C (12,2°F)
Night minimal temperature	-18°C (-0,4°F)
Day maximal temperature	20°C (68°F)
Night maximal temperature	16°C (60,8°F)
Average wind speed	10 km/h
Maximal wind speed	29 km/h
Average humidity	72 %
Average air pressure	1001 hPa
Longest day	12' 23"
Shortest day	9' 23"

Picture 3: Climate in Sisian sub region

Spring is cool and long-lasting. It starts in the second or third decade of April and is over in the second or third decade of June. The average temperature in July is 17.9 °C, absolute maximum reaches up to 36 °C.

Autumn is cool. First autumn frostbites occur in the first and second decades of October. The number of non-frosty days is 120 – 180 annually.

The average rainfall in the sub region is 532 mm[4]. The little rainfall effects the growth and formation of trees in the sub region. The heaviest rainfall is observed in spring, especially in May.

---

[4] Climate characteristics of Sisian sub region vary significantly by sources, e.g. rainfall in some sources is altering between 25 -60 mm and some other sources between 400 – 560 mm.

2.3 Main natural resources in the area

Syunik is the richest region of the republic with useful minerals. The most important of them are non-ferrous metals (copper, molybdenum, zinc and others non-ferrous) and precious metals (gold, silver) and non-metal useful minerals (construction and decorative stones, basalt raw materials, limestone and burnt shale marble and granite resources).

As for soil resources in the region and subregion, their types depend directly on altitudes of the areas where they are located. Dark brown soils occupy the areas up to 1,600 m high above the sea. Weak alkaline/basic reaction is typical to these soils. They are among weak skeletal soils, which are typical to Vorotan basin with its extremely sliced relief, while its mechanical structure comprises clay and sand (51 %).

In higher altitudes of 1,600 – 2,000 m above the sea light brown soil predominates which mainly differs from the previous one by its humus content in the upper horizons.

In altitudes of 2,000-2,200 m mountainous black soils are popular, which are distinguished by their good partition of genetical horizons, their powerful profile, rich humus in their upper layers (4 – 11 %).

Table 3: Big rivers in Sisian sub region

	Length in RA, km	Average slope, %	Water collection surface, km^2	Average annual flow rate, m3/sec	Annual average flow, bln. m3
Vorotan	111	21	2,000	19.7	0.62
Voghji	43	68	788	11	0.35

Regarding water resources, Syunik region is rich in rivers with numerous tributaries, among which the Voghji, Vorotan, Vachagan and Meghriget rivers can be distinguished.

The Voghji and Vachagan rivers flow across Kapan town. Besides mountains surrounding the town also have thousands of springs and small rivers/ tributaries appearing in the result of the snow melting

Table 4: Reservoirs in Sisian sub region

	Volume, mln. m^3	Mirror surface, ha
Spandaryan	257.0	1,025
Shamb	13.6	112.0
Tolors	96.0	480.0
Angeghakot	3.4	54
Brnakot	0.54	Not applicable[5]

down Mount Khustup. These tributaries altogether combine into the river Vachagan.

3250 m high above the sea level the river Meghriget generates from Lake Kapuyt (the blue lake in translation), which along with the river Kajarants combines into the Voghji River.

Sisian sub region particularly includes the Vorotan and Voghji (see Table 3).

Sisian sub region is also rich in mineral waters (Sisian- forest nursery, Sisian-airport, Angeghakot, Urut, Aghitu, Lernashen, Uyts, Lor, Shaghat, etc.). These waters mainly comprise iron, fluorine, bromine, manganin and copper. They are fully drinkable healing waters very similar to Bjni and Hankavan waters. By their consistence, they are considered to be analogies for "Jermuk" and "Narzani" of Kislovodsk, and the only difference is temperature.

As for reservoirs, currently there are 9 of them in Syunik region. Sisian sub region mainly comprises the reservoirs of Spandaryan, Shamb, Tolors, Angeghakot and Brnakot, detailed

---

[5] Exact data missing on formal and non-formal sources

description of which is presented in Table 4. They are basically of energy supply significance, except the latter which is mainly used for irrigation. Among other reservoirs throughout Syunik region we should mention Geghi, Davit-Bek, Qarahunj and Dzhil with volumes of correspondingly 15 mln, 3.2 mln, 1.27 mln and 0.5 mln m^3, which are completely exploited for irrigation purposes.

Picture 4: Tolors Reservoir

Spandaryan and Tolors reservoirs are located in Sisian sub region, moreover Tolors reservoir is in Tolors pilot community. It is one of the main regulating reservoirs of Vorotan hydroelectric cascade. It is supplying Shamb and Tatev water power stations.

In terms of esthetic beauty of the scene, it's amazing to watch the reservoir in spring, summer and autumn. There is a monastery of 19th century, St. Hripsime, which sank under water during decades when water level went up. So, when in late summer or early autumn, when water level is reduced, the basilica church appears with all its beauty and the Christian cross on its cupola.

According to a few regional, local and state media sources, a construction prospect project launched in the region in summer, 2016, in the framework of which 26 reservoirs are planned to construct in the basins of the Vorortan, Meghriget and Voghi rivers. Three reservoirs have already been projected – Mukhuturyan, Litchq and Gyolji, two reservoirs – Tsav and Norasheniak are in projecting stages. According to South Water Basin Management Plan, the implementation of the reservoir construction prospect project will create additional capacities in Syunik Region river basins to collect water about 219.4 million cum water.

According to the data received by a special state non-commercial institution (SNCO) called Hayantar, Syunik region has totally 60,203 ha of forest area, actual forest cover out of which makes totally 49,990.5 ha. These forest areas are officially included in Kapan (38,253 ha, 35,082 ha out of which forest cover), Syunik (16,530 ha, 12,845.1 ha out of which forest cover) and Sisian (5,420 ha, 2063.4 ha out of which forest cover) forestry branches which in their turn are divided into sub branches. You can see the land distribution by forestry sub branches in the table below:

Table 5: Sisian sub region, number of animals per pilot community, 2016

	Sub-branch	Total Area	Forest Cover	Total Area, Kapan	Forest Cover Kapan
Kapan Forestry	Arajadzor	6,883	6,022,8		
	Kapan	6,015	5,298,8		
	Davit Bek	10,571	9,536,2	38,253	35,082
	Syunik	4,465	4,229,5		
	Norashenik	2,672	2,635,5		
	Chakaten	7,647	7,359,2		
Syunik Forestry	Goris	6,919	4,731,9		
	Shurnoukh	5,181	3,990,5	16,530	12,845,1
	Archvan	4,430	4,122,7		
Sisian Forestry	Sisian	2,793	1,308,7	5,420	2,063,4
	Shaghat	2,627	754,7		

According to the same source, regarding the use of volumes of the timber cut and marketed by "Forestry" branch offices of "Hayantar" SNCO throughout the RA6 for the period of 2011 – 2016 are presented below:

Figure 1: Volume of cut and marketed timber in the RA, 2011 – 2016, ha
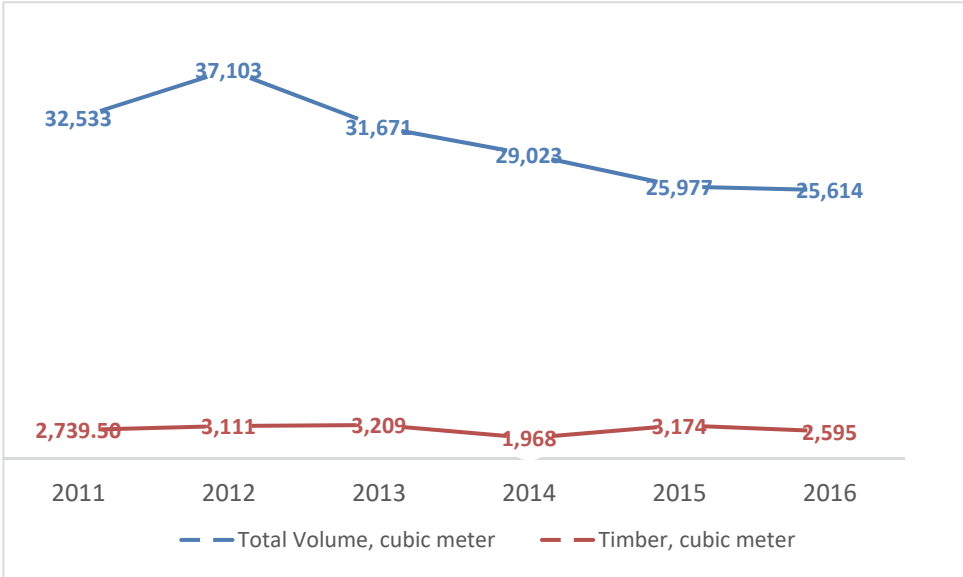
In Syunik region aerial chemical control measures were implemented against leaf eating pests and diseases on 2500 ha of forest cover in 2012 and on 5,810 ha in 2013. Aerial chemical methods of control proved to be highly efficient.

2.4 Key factors hindering the maintenance of natural resources in the area: analysis from symptoms to causes

Recently livestock quantity has increased drastically and the under-disciplined pasture use and irregular management have significantly deteriorated the situation with natural pastures. Irregular use of the pasture areas has drawn to both qualitative and quantitative changes and degradation.

Hereby, due to elemental livestock breeding the influences of risen risks on natural ecosystems has remarkably increased. As a result, general biodiversity, fodder system and livestock production is under high risk, which itself effects socio-economic situation and incomes of the population in general.

Issues in Syunik region are mainly conditioned by:

- The large distance from the capital city and lack of alternative means of transport;
- High level of urbanization: - 67.4 % of the population is located in urban settlements, which causes high level of unemployment (12 % in 2014) and low incomes of a big share of the population;
- Low degree of external investments and development infrastructures;
- The large number of frontier, mountainous and high-mountain uncrowded settlements (80 %).

---

6 No separated data for Syunik region

As primary research in the communities by direct interviews with the mayors of the communities showed, the roots of these and other issues also go in the traditional approaches, mentality level of the population, who do not generally think over rational use of natural resources and raise the risks of degradation and regress in ecology system which, of course, will be followed by reduction of quality of life in the communities in terms of socio-economic situation and other interconnected fields.

Here the deep understanding and awareness raising among the population involved in farming and livestock come to help: a tendency, which is applied nowadays by a few development projects and international institutions.

As mining industry is especially developed in Syunik, the region is also well known for its dangerous and toxic tailings, which are a huge risk for natural environment. Artsvanik tailing is among the world's largest tailings. It is located in the gorge of the Artsvanik River and is full of 300 mln. Tones of toxic mass. Tailings of "Zangezur" Copper-molybdenum Combine mainly fall here.

The tailing of Geghanush is located very close to Kapan town and is of great danger to the environment. It is exploited by the Canadian company of "Dandy Precious Metals, Kapan" and comprises almost 5 mln. m^3 of tailings.

A few more tailings are located in the area of Agarak, where tailings of "Agarak" Copper-molybdenum Combine generally fall.

Scraps and wastes of various industrial productions also influence natural environment magnificently, what the Regional Administration of Syunik is continuously taking directed measures for. For instance, in 2016 special assistance was provided towards processing, neutralizing, maintaining and transporting the waste, as well as local health companies signed corresponding contracts upon dangerous waste processing and neutralization.

Special measures were taken to regulate ecological payments and ensure their proper flow into state budget (according to detailed calculations over 1.9 mln. AMD was input into the budget).

According to state statistics for 2015, the quantity of hazardous substances emitted into atmosphere from stationary sources per capita in Syunik region makes 63.5 kg while average indicator of RA is 42.9 kg. In this indicator Syunik is on the 4th place after Lori, Tavush and Kotayq regions (206.9 kg, 157.5 kg, 96.9 kg correspondingly). Payment for environment protection and environmental resources use per capita in the region makes 728.7 AMD, which is almost 1.4 times as low as the average indicator for the RA (1005.7 AMD).

Exploitation of hydroelectric power stations in their turn are at least of special importance in terms of risks against natural environment. One of these plants, Tatev hydroelectric power station is located in Vorotan gorge which is the firstling of Vorotan hydroelectric plants cascades, on the basin of Shamb reservoir, where water flows from through an 18-km-length tunnel and reaches Tatev hydroelectric plant turbines. Shamb, Shaki, Spandaryan hydroelectric plants are also located in Sisian sub region producing and supplying energy throughout the territory. As for Syunik region generally, Meghri hydroelectric power station is also among energy producers here.

3. SOCIO-ECONOMIC SITUATION

3.1 Key economic branches developed and developing in the region

In 2015 the share of economy main branches of the RA Syunik region in total volume of correspondent branches of the republic comprised the following:

Figure 1: Economy main branches in Syunik, share in RA, %, 2015
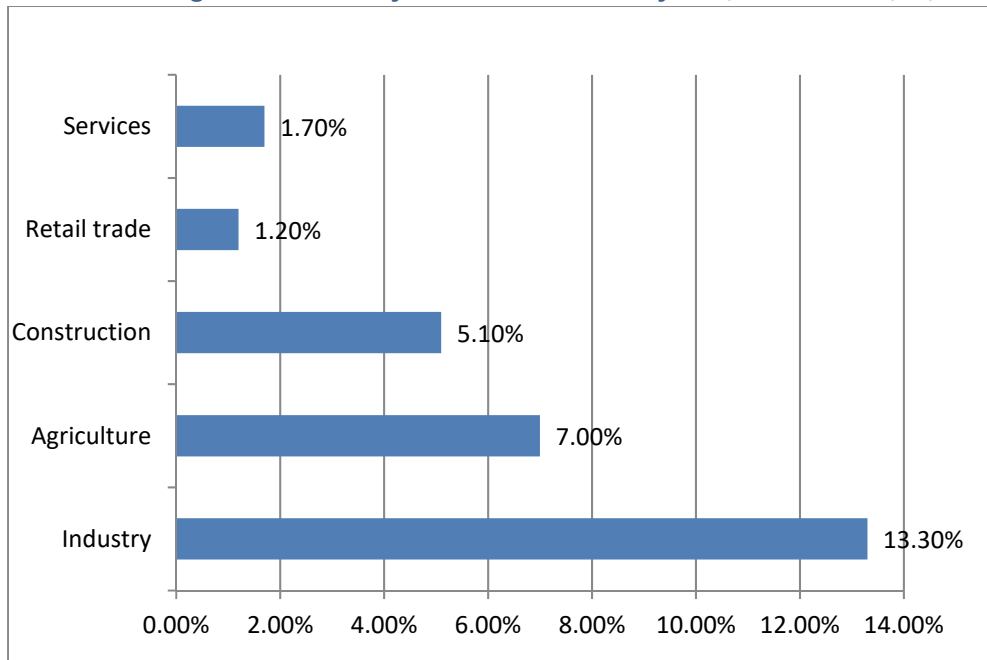
The most developed branches of economy are industry and agriculture.

Industry in Syunik region. The main branches of industry in Syunik region are mining and production of electric energy. The prevailing part of electrical energy produced in the region belongs to Vorotan hydro-electric station cascade, which is located in Sisian sub region territory and supplies energy of 1.1 bln. kilowatt per hour annually due to its total capacity of almost 404.2 megawatt. Below you can find the detailed description of industry in the region by its types expressed in million (mln.) AMD.

Figure 2: Industry branches in Syunik region, mln. AMD, %, 2015
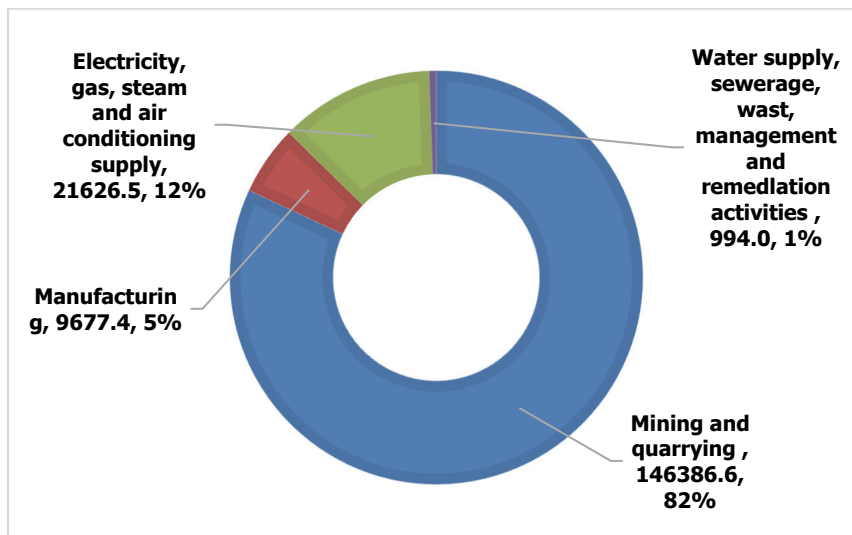
It's also informative to observe the dynamics of Syunik industry in comparison with the RA indicators:

Figure 3: Industry volume dynamics in Syunik region, mln. AMD
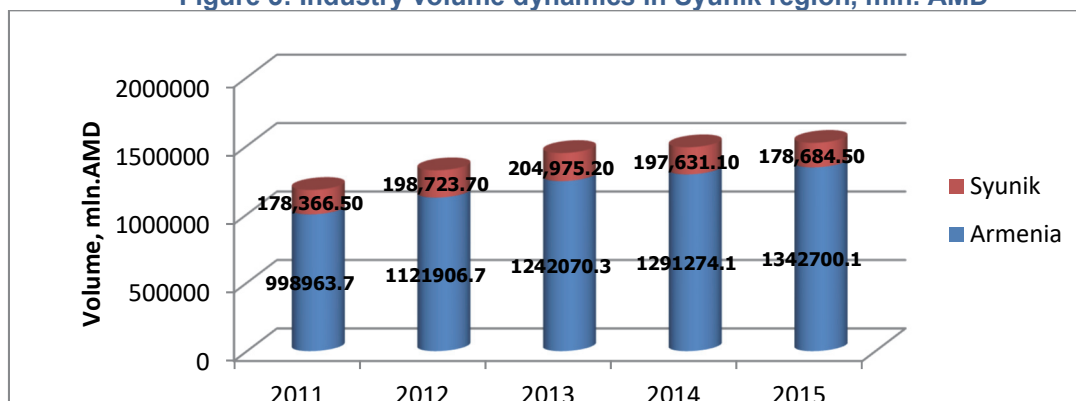
Agriculture. The agriculture of the region is mainly specialized in plant growing (especially grains and potato growing) and animal husbandry (especially cattle farming).

Table 6: Syunik agriculture volume and share in the RA, billon AMD and %

	2011	**2012**	**2013**	**2014**	**2015**
Armenia	795.0	841.5	919.1	993.5	1001.2
Syunik	50.4	57.7	62.4	70.2	70.2
Syunik	**6.3 %**	**6.9 %**	**6.8 %**	**7.1 %**	**7.0 %**

As of 2015, in Syunik agriculture share of livestock makes 55 % and 45 % for horticulture. According to annual regional statistic publications, number of agricultural animals in Syunik region in 2016 makes correspondingly as follows:

A) **Cattle** – 63,000 heads
   including **cows** – 29,900
B) Small cattle, **goats** and **sheep** – 133,400 heads

C) **Pigs** – 13,7000 heads

D) **Horses** – 2,600 heads

For estimating the situation in the Pilot communities more objectively, registers on livestock husbandary were received in the mayor's offices and studied in details.
In the table below you can see the overall distribution of livestock by types of animals and birds per community:

Table 7: Sisian sub region, number of animals per pilot community, 2016

	Cattle	Small cattle	Goats	Pigs	Horses	Rabbits	Birds	Fur animals	Beehives	Donkeys	Mules	Buffalo
Gorayk	1,375	1,648	0	14	38	0	1,491	0	298	1	0	0
Tsghuk	1,203	1,672	0	85	14	0	890	0	0	0	0	0
Sarnakunq	1,227	2,210	9	91	18	114	1,202	0	222	0	0	0
Spandaryan	910	1,112	1	73	17	10	1,110	0	598	1	0	0
Brnakot	3,170	3,690	45	213	55	250	2,600	0	1,200	7	0	0
Tasik	611	315	0	53	6	0	774	0	243	0	0	0
Shaki	1,535	2,583	31	317	32	41	3,744	0	821	6	0	0
Tolors	350	1,199	31	32	8	25	920	0	170	2	0	0
Salvard	673	1,179	0	70	34	0	1,061	0	784	2	0	0
Ashotavan	390	885	0	18	8	24	1,920	0	530	0	0	0
Noravan	536	830	17	119	24	0	1,105	0	350	1	0	0
Nzhdeh	295	202	58	26	21	0	227	0	261	0	0	0
Total	**12,275**	**17,525**	**192**	**1,111**	**275**	**464**	**17,044**	**0**	**5,477**	**20**	**0**	**0**

As the table shows, small cattle and cattle are of significant importance among the Pilot communities and in consequence are the main source of livelihood for rural population.

Several types of the animals above should be observed separately regarding their role, yield and economic importance. For example, for long-term purposes it's useful to analyze what the potential for further developments and incomes from livestock is. So, here we should pay attention to the cows, production bulls, hens, etc. Data below is quite comprehensive to see this potential:

Figure 4: Animals of production importance, January 1, 2016
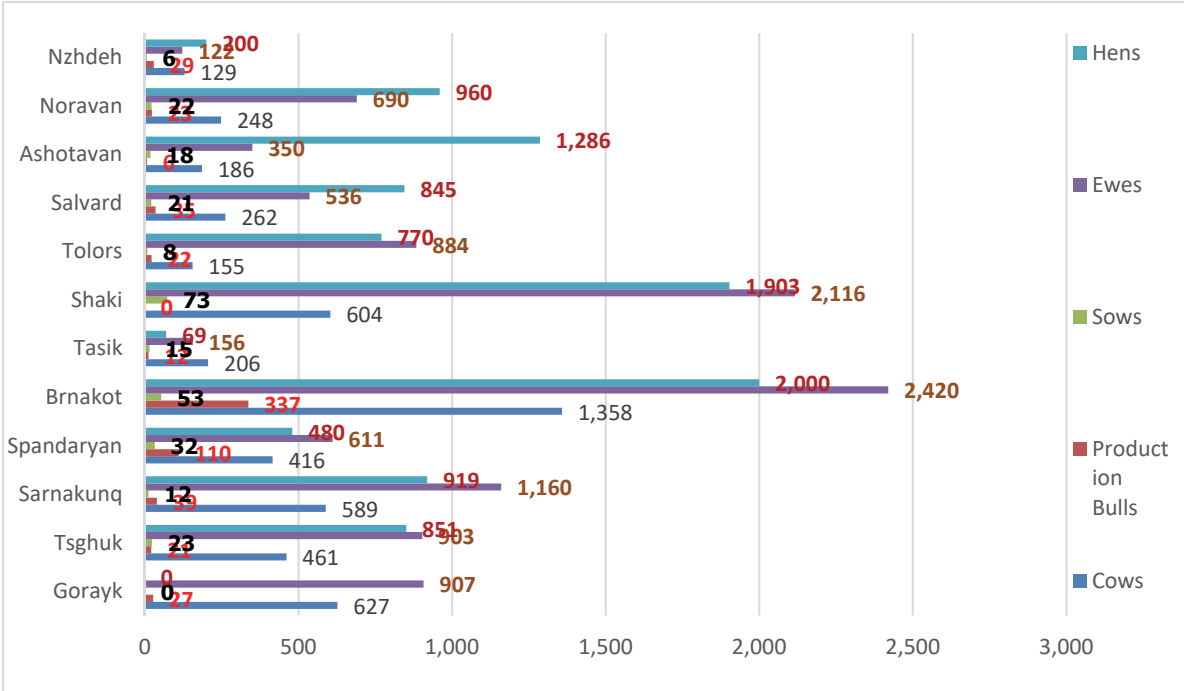
It is valuable to review the volume of agricultural products in comparison with the same indicator for the RA. Here livestock products are presented throughout Syunik region.

Table 8: Animal products, Syunik, 2016

Products	Quantity, ths. head		Share of Syunik animals in RA, 2016
	Syunik	RA	%
Animals& birds for slaughter in live weight, ths. tonnes	17.7	176.1	10.1%
Milk, ths. tonnes	74	728.6	10.2%
Eggs, mln. items	42.7	659.8	6.5%
Wool,tonnes	255.8	1,571	16.3%

Other branches and economic activities (construction, retail trade, services, external trade, etc.).

Freight and passenger transportations in the region are implemented by road, railway and electric transports (cableway/ropeway).

Armenia-Iran motor-road passes through the region, which has a great importance for the region economy development. In 2008 the "Kapan-Tsav-Meghri" motor-road of strategic

importance was put into operation, which is alternative for "Kapan-Qajaran-Meghri" interstate road alternative and in technical indicators it surpassed the last one.

The major motor-road which connects the RA to Artsakh and the only direct connection way between RA and The Republic of Islamic Iran are passing through the region.

Due to lack of official detailed data in communities, we have to look through a larger scale of construction, retail trade and services comparing Syunik region dynamics with the RA.

Table 9: Construction share in the RA volume, mln. AMD and %

	2011	2012	2013	2014	2015
Armenia	504,824.5	479,415.6	453,449.3	463,858.0	481,496.9
Syunik	38,110.3	28,289.2	24,697.1	16,202.7	24,784.7
Syunik, %	7.5 %	5.9 %	5.4 %	3.5 %	5.1 %

Table 10: Retail trade share in RA volume, mln. AMD and %

	2011	2012	2013	2014	2015
Armenia	1,302,252.1	1,379,500.3	1,452,528.3	1,466,090.6	1,313,998.1
Syunik	12,102.4	15,361.0	20,698.8	27,404.5	15,370.4
Syunik, %	0.93 %	1.11 %	1.43 %	1.87 %	1.17 %

Table 11: Service share in RA volume, mln. AMD and %

	2011	2012	2013	2014	2015
Armenia	840,033.4	941,280.0	988,158.3	1,090,528.6	1,144,605.3
Syunik	9,405.1	11,695.6	13,585.6	14,564.9	19,095.9
Syunik, %	1.12 %	1.24 %	1.37 %	1.34 %	1.67 %

As for construction implemented in 2015, Syunik – 24,784.2 mln. AMD, taking the 3rd place after Yerevan (306,664.5 mln. AMD) and Lori (26,876.1 mln. AMD).

Regarding the retail trade, the latest statistics shows the following image of sales outlets in the region:

Table 12: Retail sales outlets, quantity in Syunik

	2011	2012	2013	2014	2015
Shops	173	167	183	201	226
Stalls	196	174	168	151	135
Agricultural production markets	1	0	0	0	0
Consumer goods markets	4	4	8	7	7
Other retail outlets	41	38	39	40	47
Total retail outlets	**415**	**383**	**398**	**399**	**415**

Having a look at the distribution of service types and directions provided in Syunik region, it's worthy to observe that the greatest share in overall turnover in the field belongs to transport services and Finance and Insurance products.

Figure 5: Service distribution by types in Syunik region as of 2016, mln. AMD and %
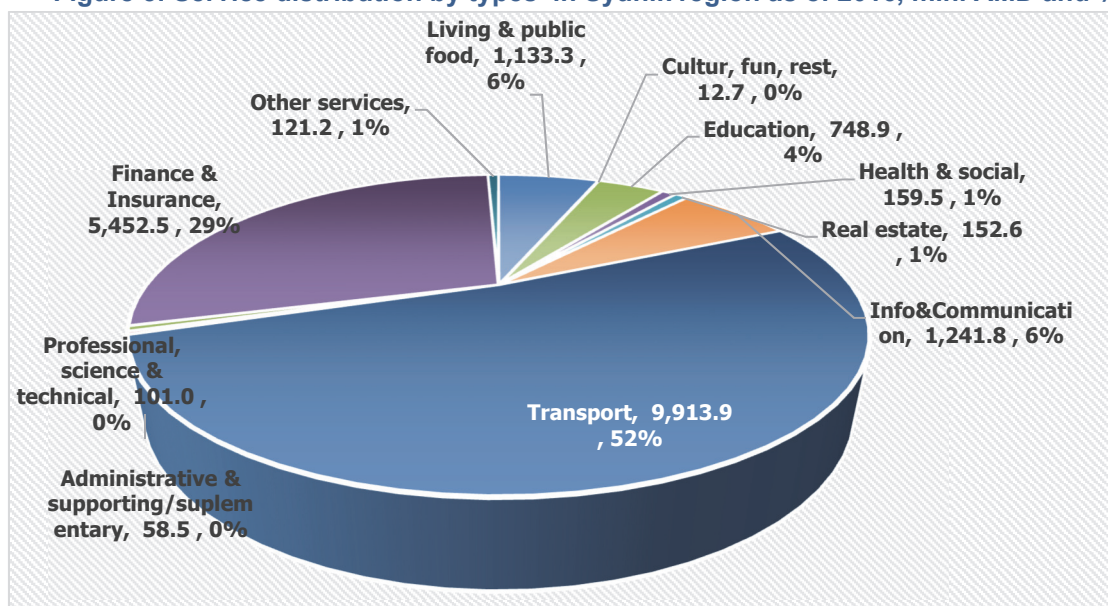
Export from Syunik region in 2015 makes 127,261.3 mln. AMD (2nd place after Yerevan, 343,908.3, more than 18 % of total export from the RA), total export from the RA makes 705,116.8 mln. AMD.

Table 13: Export volume and share in the RA[7], mln. AMD and %

	2011	2012	2013	2014	2015
Armenia	489,032.3	550,560.0	594,392.0	632,840.4	705,116.8
Syunik	103,329.5	106,332.4	116,906.3	113,320.5	127,261.3
Syunik, %	21.1 %	19.3 %	19.7 %	17.9 %	18.0 %

Import in Syunik region in 2015 makes 28543, 9 mln. AMD, total in the RA 1500295.

Table 14: Import volume and share in the RA, mln. AMD and %

	2011	2012	2013	2014	2015
Armenia	1,482,396.3	1,638,843.6	1,705,848.2	1,735,308.6	1,500,295.3
Syunik	36,352.4	37,762.6	30,964.5	31,353.1	28,543.9
Syunik, %	2.5 %	2.3 %	1,8 %	1.8 %	1.9 %

Comparing other important indicators of economy in Syunik region towards the RA figures statistically, we notice that consumer price indexes in comparison for 2015 with 2014 year in Syunik region make 103.8 %, out of which consumer price indexes of food items (including cigarettes and alcohol), in 2015 in comparison with 2014 make 103.7 %, setting Syunik in the 2nd place along with Ararat.

Consumer price indexes of non-food items, in 2015 in comparison with 2014 year, Syunik 106.1 %. Indexes of tariffs of services rendered to the population 2015 in comparison with 2014 year in Syunik region make 102.2 %,

---

[7] Does not include physical persons' trade

3.2 Demography, education, employment, migration, living standards, income and expenses, dependence on natural resources for survival and livelihoods, energy sources and related fields (statistics combined with crosschecked actual data upon)

Demography. Considering Sisian sub region as a focus for our current study, let's see the overall description of its population and dynamics through the years of 2011 – 2016 (including the Pilot communities and Sisian town[8]).

Figure 6: Total population in the Pilot communities and Sisian town, people
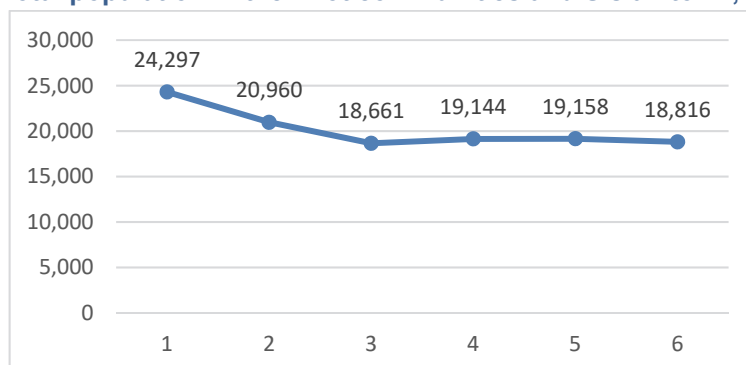
It's worth mentioning that the dynamics is based on statistical data from Armenian National Statistics Service, where slight differences[9] can be noticed compared with the primary data obtained in the communities directly.

A more profound and actual image of the Pilot communities in terms of permanent and actual population and their field of employment in numbers can be found in the table below based upon data revealed in the community registers:

Table 15: Population in the Pilot communities, as of January 1, 2016

	Permanent population (including temporarily missing people),	Permanently present population, people	Temporarily missing, people	Long-term missing, people	Present/ actual population (including temporarily present), people	Employed (not including temporarily present people)	Employed in agriculture	Employed in other field, non-agricultural	Employed in organizations
Gorayk	493	420	73	29	468	315	255	60	60
Tsghuk	388	360	28	4	408	280	221	59	59
Sarnakunq	504	425	79	0	472	252	219	33	33
Spandaryan	454	436	16	12	468	252	220	32	32
Brnakot	2,041	1,855	186	45	2,249	1,715	1,556	159	159
Tasik	292	234	58	7	267	139	114	25	25
Shaki	1,349	1,176	173	36	1,232	636	561	75	75
Tolors	393	375	18	3	388	275	235	40	40
Salvard	243	181	62	85	210	140	110	30	30
Ashotavan	635	552	83	24	596	396	311	85	85
Noravan	463	465	58	12	429	285	179	106	106
Nzhdeh	161	94	67	21	119	62	56	6	6
Total	**7,416**	**6,573**	**901**	**278**	**7,306**	**4,747**	**4,037**	**710**	**710**

[8] Further on data will be based mostly on Pilot communities, not including Sisian town
[9] Population numbers differ in Tsghuk, Spandaryan, Shaki and Nzhdeh communities, which can be reasoned by the rigid and sometimes incorrect calculations in community registers

16

The data on number of households in the Pilot communities is presented in two main criteria, informing us on the total number of registered households and on actually available ones per community. This data is also based upon primary sources, such as the latest updated registers of the communities and settlements included.

Figure 7: Number of households in the Pilot communities, as of January 1, 2016
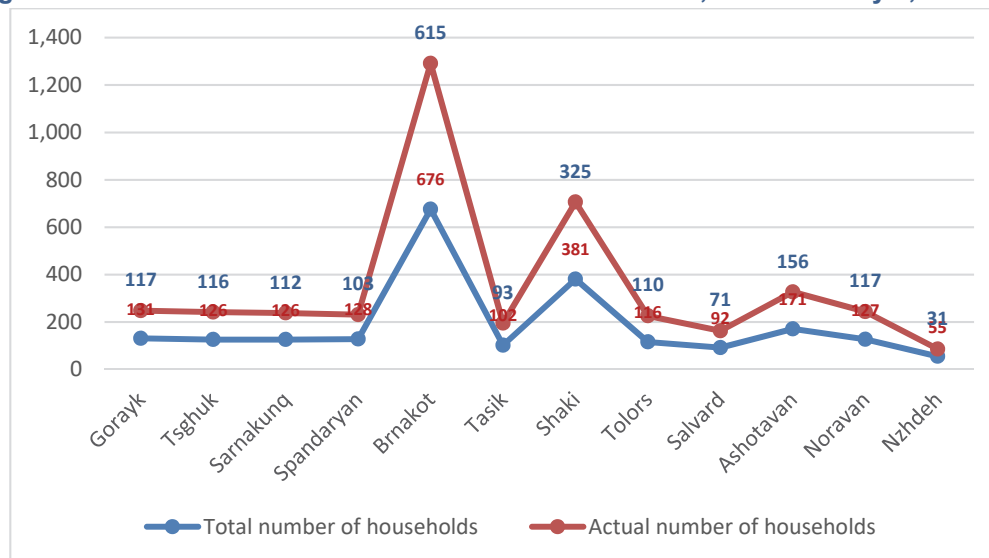
Regarding the demography, it's also interesting to look through the age and gender groups per community which can be useful in estimating and distributing potential targeted activities of any launching project there. Information source is also the community register directly.

Table 16: Demography in the Pilot communities, age and gender groups, 2016

	0-15 years old/ male	0-15 years old/ female	16-62 years old/male	16-62 years old/ female	63 and older/ male	63 and older/ female	15-49 years old
Gorayk	52	44	131	175	32	34	252
Tsghuk	39	30	126	154	29	30	208
Sarnakunq	62	39	161	152	26	32	218
Spandaryan	50	29	188	140	25	36	261
Brnakot	219	240	663	778	157	192	887
Tasik	17	30	89	98	13	20	39
Shaki	153	111	408	414	61	85	494
Tolors	36	38	114	133	34	33	256
Salvard	21	18	70	55	23	23	76
Ashotavan	63	54	172	244	25	38	322
Noravan	72	70	106	134	16	31	201
Nzhdeh	24	17	34	21	5	18	48
Total	808	720	2,262	2,498	446	572	3,262

According to the latest statistics for, density of population in Syunik is much lower compared with that of almost all the other regions and the average density in the RA which makes 101 people / km^2, except Vayots Dzor which has the lowest density – 22 persons/m^2.

Regarding some demographic indicators, such as number of live births by sex and number of deaths by sex, Syunik also has interesting statistics. The former makes 1,421 people 48.1 % of which women, and the latter makes 1,284 people, 47.5 % of which women/female.

Population natural growth by sex in Syunik region made 63 men and 74 women in 2015, which is the lowest indicator for the RA compared with all the other regions and considering its share in the total natural growth in the RA which makes 13,885 people (less than 1 %).

Infant mortality rate per 1000 live births makes 7 pro mile, which is in 1.8 units as low as the average rate in the RA, and is quite positive compared with 7 other regions with much higher mortality rate.

Education. Regarding education, it's worth mentioning that specific data on the Pilot communities was not found, yet here we have the overall description for the whole Syunik region, stating the distribution of educational institutions by their type, basic secondary school data and higher education quantitative data in comparison with total numbers in the RA.

Table 17: State secondary schools, attendance in Syunik, 2015/2016 educational (edu.) year

	Syunik	**RA**	**Comparison %**
Number of pupils in schools	16,477.0	364,398.0	4.5%
Average attendance per school	136.2	253.4	53.7%
Number of classes/grades per school	12.5	13.9	89.9%
Average attendance per class	10.9	18.2	59.9%
Number of Pupils per pedagogue	7.4	9.4	78.7%
Number of pedagogues per school	18.4	26.9	68.4%

In terms of higher education for the 2015/2016 educational year, number of students in paid and free of tuition fee departments are introduced below in comparison with the RA indicators.

Table 18: Number of students in higher specialized establishments in Syunik region for 2015/2016 edu. year

	Number of students with paid and free of charge tuition, persons				**Total number of students, persons**	
	Free of tuition fee		**With tuition fee**		**Total**	**Female out of them**
	Total	**Female out of them**	**Total**	**Female out of them**		
Syunik	149	93	1,652	803	1,801	896
RA	10,017	4,929	74,574	41,251	84,591	46,180
Syunik share, %	1.5%	1.9%	2.2%	1.9%	2.1%	1.9%

It's worth mentioning that in Syunik region we have quite interesting and promising data, which shows that Syunik has bright minds and a great potential for intelligent human resources in the RA different fields of economy. Art, music and other institutions for cultural education institutions are operating quite actively in the region.

Started from state pre-school establishments/institutions, number of children per 100 seats in them makes 89.3, which is still in 0.1 indicators higher above the average number for the RA surrendering only Aragatsotn, Ararat and Tavush regions in a few points.

Number of pupils in state general education schools per teacher for 2015/2016 academic year makes 7.4 people, while the average for the RA is 9.4, and here Syunik is on the 8th place.

Number of pupils per music, art, fine art schools and child and youth development center for 2015/2016 academic year in Syunik region makes 137.3 people, while the average for the RA is 200.9 people. By this indicator Syunik surrenders the capital city Yerevan, Gegharkunik, Kotayq, Armavir, Ararat and Vayots Dzor regions.

Number of students per secondary specialized establishment/institution for 2015/2016 academic year in Syunik region makes 180.6 people, which is inferior to the RA average indicator of 250.5 people.

Number of students per higher specialized education establishment for 2015/2016 academic year in Syunik region makes 450.3 people, 38.2 % out of the average number in the RA, which makes 1174.9 people.

We should also pay attention to cultural life, behaviors and tendencies of the region when discussing the general indicators in educational level of the population and their social-economic activeness.

Number of attendance to museums per 1000 people in the Syunik region in 2015 makes 72.1 people, which is less than 10 % of the average number in the RA.

Number of attendance to theatres per 1000 people in Syunik region in 2015 makes 218.9 people which in 128.3 % exceeds the average number for the RA (170.6 people) and makes Syunik the second leader in the indicators after Yerevan (373.7 people).

Number of attendance to libraries per 1000 people in Syunik region in 2015 makes 2597.3 people which is almost 1.6 times as much as the average number in RA (1621.7 people, and which makes Syunik the second region after Vayots Dzor (3506.8 people).

Number of athletes in sport organizations of Syunik Region per 10 ths. population in 2015 makes 125.6 people, which is a bit lower than the average indicator in the RA (136.8 people).

Employment. As Table 14 shows, agricultural activities make a significant share in employment in the pilot communities. However, it would be also interesting to look through the general picture of the whole region on such important indicators as unemployment level and average nominal salary per month. Here again the statistics[10] comes to help us to see the picture and comparison with the RA.

	2014			2015		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
RA	**15.8**	**19.5**	17.6	**17.6**	**19.5**	18.5
Syunik	12.4	24.8	18.3	18.0	12.2	15.7

Table 19: Unemployment level in Syunik region by gender, %, 2014 - 2015

[10] Data available for only 2014 and 2015 years.

It's also interesting to watch the dynamics of the size of nominal salaries in average throughout Armenia and Syunik region for 2013 – 2015 years.

Figure 8: Nominal salary per month in average in Syunik, AMD, 2013 - 2015
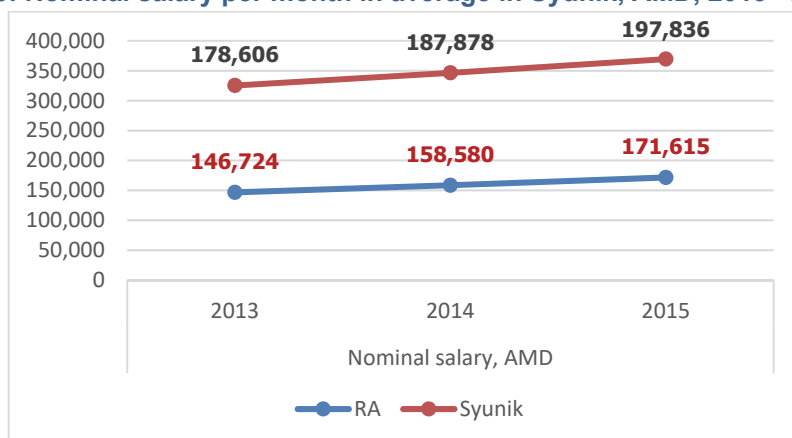
Migration. For migration issues direct interviews with mayors come to a basis. Considering their observations, in Brnakot community and Spandaryan settlement of Gorayk community the rate of migration is quite high, the only smoothing fact is that it is seasonal, and the migrants are back to their homeland almost every winter. Based on the same observations, the main opportunity of employment or self-employment in most communities is farming and livestock. Only in Noravan community there is a military unit, where most young people tend to work, and in Gorayk community a huge gold mine has been is going to operate soon which is another great opportunity for their youth not to leave the country for work.

Table 20: Migration status by volume, purpose, direction and opportunities in the communities, 2016

	Migration Level	Migration directions	Migration volume, people	Migration purpose	Opportunities in the village
Gorayk	Low		12 people, seasonally		Gold mine to restart operating
Tsghuk	Low		5 %, seasonally	Outgoing work	Farming & livestock
Sarnakunq	Low	Russia	15 %, seasonally	Outgoing work	Farming & livestock
Spandaryan	High	-	90 % of youth	Outgoing work	Farming & livestock
Brnakot	High	Russia, Nagorno-Karabakh	300 seasonally	Outgoing work	Farming & livestock
Tasik	Low	-	1-2 %	Outgoing work	Farming & livestock
Shaki	Low	Russia, Nagorno-Karabakh	5 %, seasonally	Outgoing work	
Tolors	No migration	-	-	-	Farming & livestock
Salvard	Low	-	4 people currently	Outgoing work	Farming & livestock
Ashotavan	No migration	-	-	-	Farming & livestock
Noravan	Low	-	5 people	Outgoing work	Military unit
Nzhdeh	No migration	-	-	-	Farming & livestock

Living standards, poverty rate. Regarding living standards, recognition of poverty rate[11] in the region is valuable.

Table 21: Syunik poverty rate in comparison with the Republican Average, %, 2012 – 2015

	2012			**2013**			**2014**		
	Poor	**Out of which - extremely poor**	**Not poor**	**Poor**	**Out of which - extremely poor**	**Not poor**	**Poor**	**Out of which - extremely poor**	**Not poor**
Republican Average	32.4	2.8	67.6	32.0	2.7	68.0	30.0	2.3	70.0
Syunik	25.6	0.7	74.4	25.2	1.8	74.8	24.2	1.0	75.8

It's also worth mentioning that a significant share of rural communities mostly makes living out of agricultural products sales. However, as no officially registered figures and/or related data could be revealed either from primary, or from secondary sources, let's watch the distribution of income per capita by their sources for the whole Syunik region upon latest statistics.

Table 22: Syunik, income sources for households per capita, AMD, 2015

	Employment	**Self-employment**	**Sales of agriproducts and animals**	**Property (rental fees, interest rates, dividends)**	**State benefits & allowances**	**Transfers**	**Other income**	**Total**
Republic Average	28,800	4,842	2,674	115	9,284	4,698	1,964	52,377
Syunik	49,599	4,098	4,022	187	9,523	4,567	65	72,061

As obvious in the figure below, the significant share of income for households in Syunik make salaries of employees in state and private organizations. The data was revealed through large-scales annual survey among households of Syunik organized and implemented by regional government bodies.

Figure 9: Syunik, distribution of income by sources per capita, AMD, 2015

---
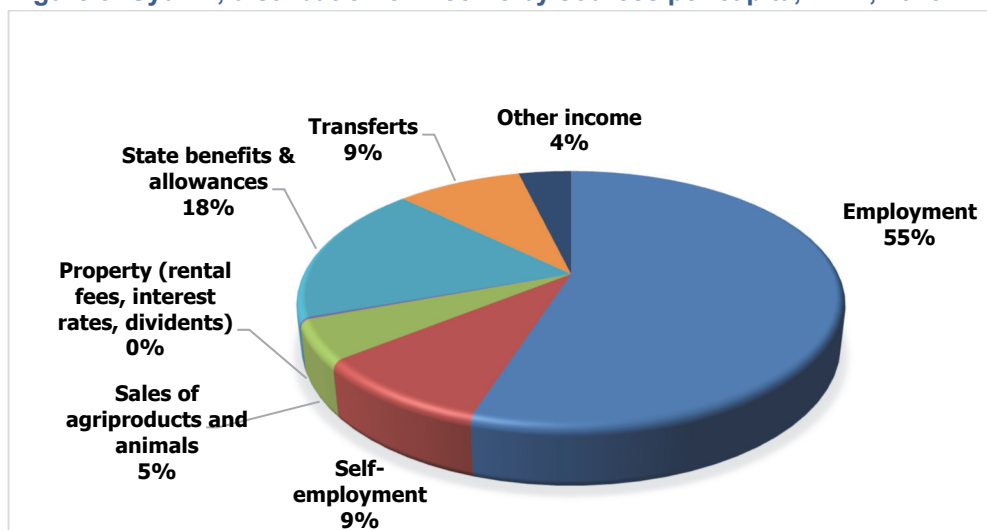
[11] Data missing for 2015 accounting year

When observing the living standards of the whole region, it's not useless to recognize such sides of their social characteristics, as tendency in family life.

In terms of registered marriages, according to the latest statistics, Syunik has one of the lowest indicators in the RA, making 590 cases out of 17603 cases in all the Republic in 2015 totally (actually making 3.35 % of it).

In terms of registered divorces, the proportional image is a bit different, making 146 cases out of 3670 registered cases all over the RA in 2015, which is about 4 %.

3.3 The operating institutions in the field

In terms of education Sisian can be considered one of towns with average activeness, where both kindergartens, secondary and high schools, secondary specialized institutions, one state university branch, schools and centers for music and art education are located.

Sisian State College is a primary and secondary specialized establishment.

As for the higher education, Armenian National Agrarian University has a branch in Sisian as well as Yerevan State University of Engineering branches in Kapan and Goris towns.

Armenian National Agrarian University branch in Sisian is located by the address RA, Sisian, Shirvanzade 7.

Regarding energy sources, in Vorotan gorge Tatev hydroelectric plant is located which is the firstling of Vorotan hydroelectric plants cascades, Shamb reservoir, where water flows from through an 18-km-length tunnel and reaches Tatev hydroelectric plant turbines.

As for purchase points for agricultural products, I Ashotavan they said no points for milk collection exist and meat is mostly consumed within Sisian subregion by local population. No cultural centers, schools or classes exist in Ashotavan village for youth and children (art, music, painting, etc.), which is one of the necessary gaps they would desire to fulfil.

In Brnakot community there is a milk collection point where all the farmers hand in their milk. There is no institution for meat consumption, but the demand is high and the meat is sold right on spot in the village.

In terms of cultural life, there is a museum in Brnakot village in the memory of the victims of the Patritic Great War and 109 doctor-professors of the village. There are also other monuments and a village pantheon there.

As for Tasik community, there used to be a milk collection point in the village which is not operating currently, and ELOLA Closed Joint-Stock Company (CJSC) is the only company collecting the milk from the farmers.

Milk collection in Spandaryan settlement is implemented by Borisovka Limited Liability Company (LLC), Sisian-Kat LLC and ELOLA CJSC. Meat is sold out of the village.

In Tolors community there is a milk collection point constructed by CARD Foundation in 2001, which is equipped with refrigerators, milk analyzers, is accurately redecorated and equipped with computer machinery. ELOLA CJSC and Sisian-Kat also collect milk from the farmers. Meat consumption is mainly implemented by local Yezidis.

Milk in Shaki community is mainly collected by Sisian-Kat LLC and Ashtarak Kat CJSC. Meat is sold on the roads, and vegetables and fruit on spot in the village.

In Sarnakunq also milk is collected and consumed through Sisian-Kat LLC.

As for Noravan community, milk consumption is organized by ELOLA CJSC.

4. LAND RESOURCES AND USE

4.1 Land types and use directions: description

Sisian sub region is located in 1,600 m height above the sea level (elevation). Surrounding communities alternate between 1,600 – 2,200 m. Here 9 types of black soil can be found which are mainly rich in organic materials (4.9 – 7.5 %) and are of high suction/ water absorbing type.

Agricultural lands are of special importance to the region at all and make almost 95 % of all the land types altoghether.

Figure 10: Lands of agricultural significance In Syunik, ha 2016

For recognizing land resources and distribution by their use in the Pilot communities, both statistic and primary data from the mayor's offices was applied. According to this combined data, the land in the subregion occupy the areas presented in Table 22. So as to make sense on urban and rural lands, lands of Sisian town are also included in the table below.
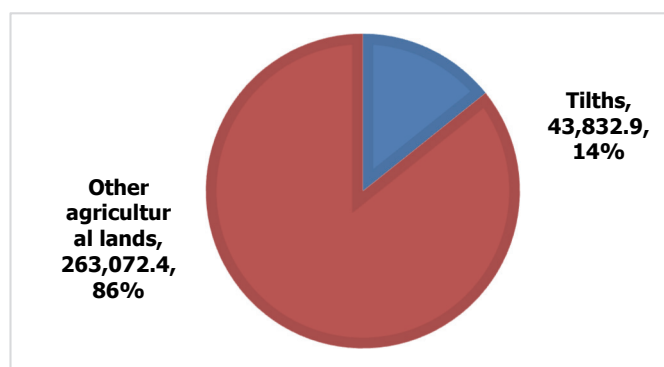
Table 23: Distribution of lands in Sisian and the Pilot communities by their use and types, ha, 2015

Communities	Agricultural lands, ha	Settlement lands	Industry, subsoil and other production lands, ha	Energetics, transport, communication and communal infrastructure lands, ha	Lands of special preservations, ha	Lands of special significance, ha	Forest lands, ha	Water lands, ha	Total
Sisian town	1,786.0	706.0	50.0	18.0	94.0	33.0	598.0	36.0	3,321
Gorayk set.	20,716.0	68.0	97.0	34.0	8.0	0.0	0.0	0.0	20,923[12]
Tsghuk set.	9,692.0	53.0	26.0	6.0	1.0	13.0	143.0	480.0	10,414
Sarnakunq set.	11,649.0	88.0	24.0	45.0	76.0	0.0	137.0	32.0	12,051
Spandaryan set.	4,663.0	67.0	11.0	6.0	11.0		139.0	48.0	4,945
Brnakot	6,781.0	276.0	23.0	3.0	9.0	0.0	166.0	22.0	7,280
Tasik	3,862.0	60.0	3.0	3.0	37.0	0.0	58.0	29.0	4,052
Shaki	7,165.0	84.0	59.0	16.0	4.0	1.0	53.0	18.0	7,400
Tolors	2,408.0	34.0	4.0	23.0	1.0	0.0	204.0	185.0	2,859
Salvard	4,065.0	72.0	90.0	0.0	1.0	0.0	0.0	25.0	4,253
Ashotavan	899.0	52.0	10.0	1.0	10.0	0.0	94.0	163.0	1,229
Noravan	4,038.0	61.0	26.0	8.0	3.0	7.0	0.0	1.0	4,144
Nzhdeh	5,455.0	43.0	5.0	1.0	0.0	0.0	0.0	17.0	5,521
Total	**83,179.0**	**1,664.0**	**428.0**	**164.0**	**255.0**	**54.0**	**1,592.0**	**1,056.0**	**88,392**

---

[12] On the official web page of Syunik province 21,685 ha is stated as a total area of Gorayk lands, however the sum of the areas of their types does not actually make that figure but 20,923. As no cadastre documents were available at the mayor's office, this data was impossible to crosscheck and the actual sum of the land types was considered as the final figure.

Out of the above-mentioned data agricultural lands have their separate characteristics and distribution into land subtypes. The figure below shows agricultural land types in Sisian town and in the Pilot communities by their areas altogether:

Figure 11: Lands share in agricultural lands in Sisian town and Pilot communities, ha, %, as of 2016
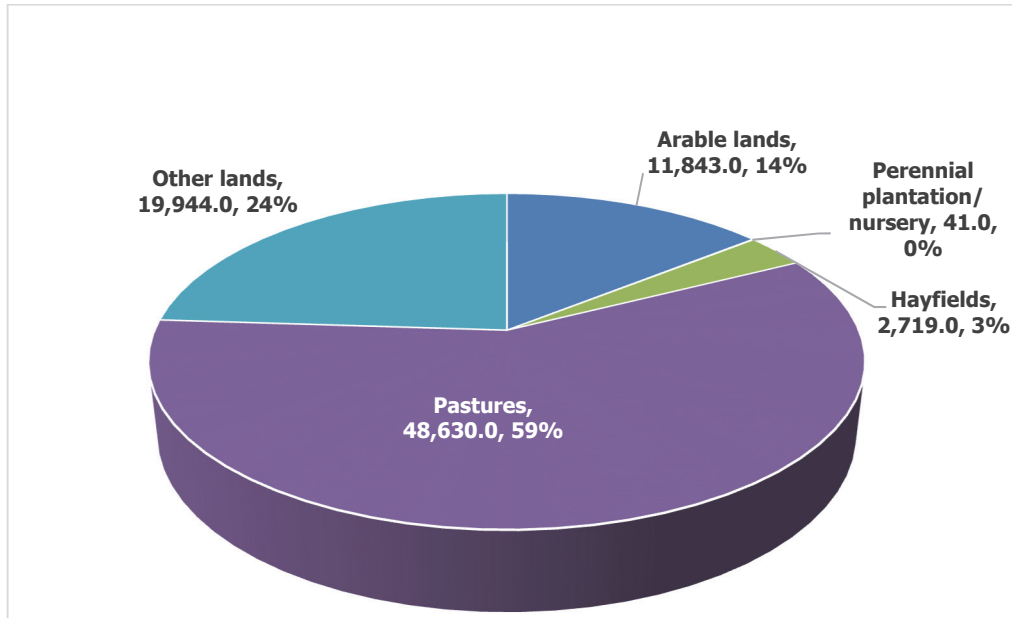
4.2 Vegetation on these lands dependent on their types and influences of use (photos included)

Vegetation in Syunik region mainly consists of steppe (cereal and different grass-cereal steppe with tragacanth plants and meadow steppe), alpine vegetation (low alpine meadows with tragacanth gas complex, alpine meadows, carpets and thick torf formation complex), forests of Georgian and Eastern oak and hornbeam, sparse forests (coniferous and leafage, in several places with Araks oak).

Sisian sub region is mainly covered by cereal and different grass-cereal steppe with tragacanth plants and meadow steppe.

It's important to recognize especially land use for agricultural purposes. In the table below distribution of agricultural lands by their harvest and products are introduced:
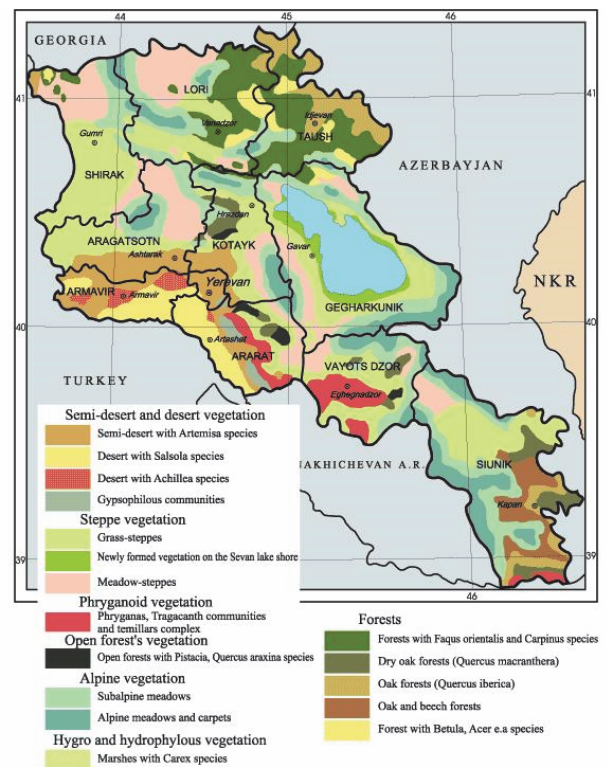
Picture 5: Distribution of different vegetation and habitat types in Armenia

Table 24: Land use types by agricultural products, Syunik region, 2015

	Arable, ha		Average yield, centner/ha		Gross yield, ths. Tons		Share of Syunik in gross harvest in RA, %, 2015	
	Syunik	RA	Syunik	RA	Syunik	RA	Syunik	RA
Corn and legume crops	25,703.0	201,254.0	26.3	31.8	67.6	637.9	10.6%	100.0%
Potato corps	1,747.0	33,306.0	189.4	228.9	33.1	764.5	4.3%	100.0%
Vegetable corps	1,083.0	29,078.0	167.4	334.7	18.1	1,031.5	1.8%	100.0%
Plantation	-	6,782.0	-	423.4	-	286.8	0.0%	100.0%
Fruit and berry plantation	2558.0	40,582.0	62	105	15	387	4%	100.0%
Grape	185.0	17,296.0	65	188	1	309	0%	100.0%

4.3 Significant alterations/changes in the field

The unsustainable use of pastures and forest areas leads to erosion, degradation, desertification and loss of biodiversity in high mountain areas of the South Caucasus (key problem).

The local population who uses the natural resources of communally managed land is the main target group. Special consideration will be given to livestock farmers and shepherds, poor smallholder farmers and women.

"Strategic Development Agency" Non-governmental Organization (SDA NGO) started cooperating with GIZ from 2013 within the scope of the projects "Developing Animal Breeding in Syunik Region" (SDA NGO) and "Sustainable Biodiversity Management in South Caucasus" (GIZ).

The key objective of this project was to develop and apply the new model developed for organizing and conducting pasture monitoring targeting improved pasture management in the communities of Armenia, as well as to assist the Government of Armenia in improving pasture management planning and methods. The model was piloted in the pastures of 24 rural communities of Sisian sub region (included all the Pilot communities)

The results of successful implementation will guarantee the reproduction of the new monitoring model in other regions of Armenia too, to improve pasture management planning, implementation methods, to ensure solutions not only to the issues of fodder provision required in the area of animal breeding, but to a more important issue, which is the regulation of reduction in vulnerability risks, protection and sustainable management of biodiversity.

What is significant to mention, that the impact of the project is already tangibly obvious in 7 Pilot communities including Sarnakunq and Spandaryan settlements within Gorayk community. The communities are applying the model and continuing with field activities.

4.4 Existing laws and legal regulations: strengths and weaknesses, tangible gaps to fulfill

In the RA Land Legislation was passed in May, 2001 and has been applied up to date with a few improvements and changes. Later in April, 2008, the RA Law about Control over Land Use and Preservation was passed and is being applied up to date.

There is also the RA Law on Land Tax operating since 1994, directed on regulation of the rights of landowners, permanent and temporary users over the state-owned land.

The rates of the tax do not depend on the income received due to land use, but mostly on the settlement types, location and significance. Land is mainly owned and managed by the municipality. Forests belong to the state and are managed by Hayantar SNCO.

The Decrees approved by the Government of Armenia on sustainable pasture management (dated 28.10.2010, No1477-N and 14.04.2011, No389-N) establishes the procedure for using pastures and grasslands in Armenia. The latter was elaborated mainly on the basis of the studies and analysis of perennial mean data, as well as the results of partial monitoring. It's worthwhile mentioning, that not always the above-mentioned procedures approved under the foregoing decrees of the Government of Armenia, can be justified for one simple reason; so far the condition and the degradation degree of pastures in various natural zones have never been clearly adjusted, registered and explained before. Evaluation of pasture condition, i.e. monitoring, is one of those processes that is required to ensure guarantees and opportunities for the implementation of sustainable pasture management.

According to N 1465 Decrees approved by the RA Government on December 19, 2013, the SNCO of "Zangezur" Biospheric Complex of Syunik region was created in the result of combination of "Shikahogh" State Reserve SNCO and "Arevik" National Park SNCO. The organization is currently implementing maintenance activities in especially reserved areas of nature occupying 79,660.5 ha totally, including 7 branches correspondingly:
  ➢ "Shikahogh State Reserve" – 12,137 ha;
  ➢ "Zangezur State Reserve" – 25,870.64 ha;
  ➢ "Arevik State Park" – 3,0353.8 ha;
  ➢ "Relict Park" State Reserve – 64,2 ha;
  ➢ "Khustup State Reserve" – 6,946.7 ha;
  ➢ "Boghakar State Reserve" – 4,048 ha;
  ➢ "Lake Sev" State Reserve – 240.1 ha.

As for legal regulations of water sector in Syunik, it's not useless to mention that Water Code of the RA was passed in June, 2002, according to which all national water properties and resources are under the sustainable control of special water management bodies and the chamber of water users and water user unions. Besides, there is a special national water policy and a national, which sets special strategy for water use and supply throughout the country. Water resources such as reservoirs, rivers and tributaries are supposed to be exploited under this code, however conflicts and violations in this sector are still difficult to avoid. So, international projects in cooperation with state and local government bodies are trying to intervene to improve the situation more or less (e.g. Asian Development Bank along with "Hayjrmughkoyughi" CJSC with its continuous funding and support).

5. NATURAL RESOURCE MANAGEMENT PRACTICES APPLIED IN THE PILOT REGION

5.1 Mapping of natural resources such as natural forests, pastures, water: general description and threats

Forests. Forests occupy a significant area of Syunik, two out of which are Mtnadzor and the unique natural forest of planes. The forests are rich in unique plants and animals.

The sustainable management of forest lands and forests is implemented on the basis of forest management plan. The latter is a technical document, created in the result of forest construction and approved for effective forestry, which fully estimates forestry and the forest use for the previous time-period, as well as the upcoming activities and interventions for forestry for the future 10 years' period. The overall goal of forestry management plans is the sustainable and continuous use of forest reserves according to forest national policy and the thesis of forest national programmes.

In the area of Sisian Forestry the first procedures of forest construction launched in 1958 in the complex of Goris forestry by the Transcaucasian Forest Construction Enterprise on a land of 2710 ha surface. Further forest construction activities were implemented in 1968, 1978 and the latest and the previous one in 1989.

On November 10, 2008, a contract of procurement was signed with "Sevada and Sisters" LLC of Tavoush region and "State Procurement Agency Armenia" SNCO in the purpose of inventory and assessment of the forests in the area of Sisian Forestry and development of the forest management plan. These activities were implemented according to the RA Forest Legislation and the directive for developing forest construction and management plans in the forests of Armenia.

According to the forest construction procedures in 1989 the total surface of the forestry was 4,737 ha, which includes Shaghat and Sisian forest states correspondingly with areas of 2,435 and 2,302 ha. Nevertheless, in line with the current forest construction, the forestry totally occupies an area of 5,420 ha, including also the forests of former collective
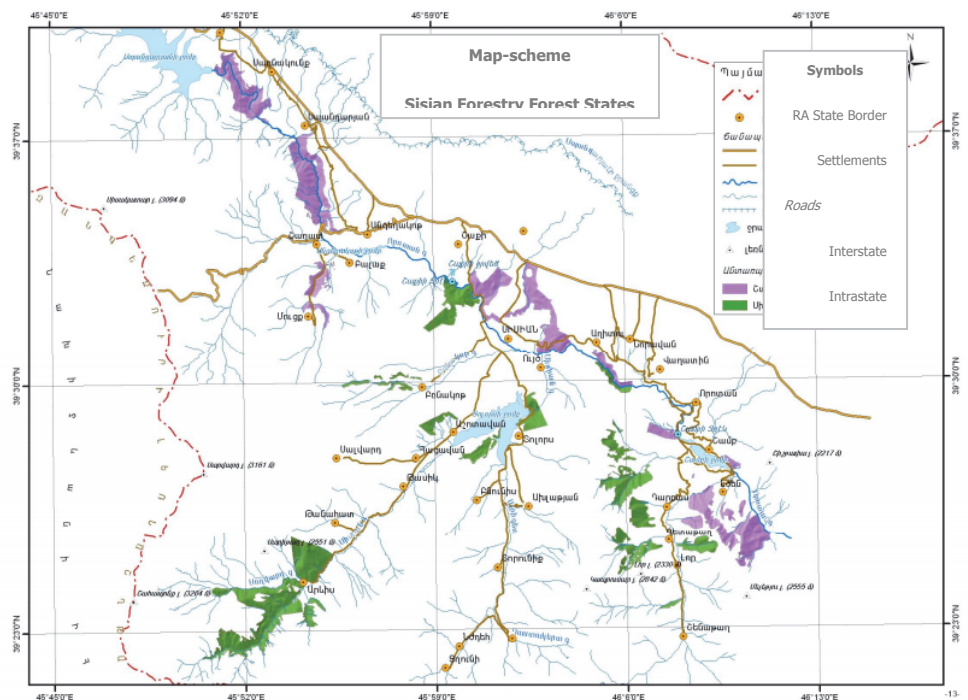
Picture 6: Map of Sisian Forestry by forest states/sub branches

and state farms (currently comprising Shaghat forest state with an area of 2,627 ha (48,4 %) and Sisian forest state with an area of 2,793 ha (51,6 %)).

In the area one can see a number of tree types typical to the RA forests. Both natural and artificial tree plants occupy the largest area of the Forestry. Most oak forests are the ones of the 5th bonitet. Climate conditions in the area are quite favorable for pine, maple, acacia, ash, elm to grow. However, the forest-cultures of the Forestry's forest management plan -21- grow slowly because of the little rainfall and the dry and poor soils.

Despite the little forest mass around, there are some wild animals typical to forests, such as bear, wolf, fox, hare, chamois and marten. Mouflon and wild pig also sometimes meet there. There are quite a lot of birds there. Vorotan and its tributaries are rich in fish.

The office of Sisian Forestry is located in Sisian town, Syunik.

Almost throughout all the area of the Forestry different levels of erosion procedures are observed for the prevention of which forest tree planting activities are of a significant importance.

Figure 12: The distribution of the forest-covered surface and reserves by the altitude above the sea level, %
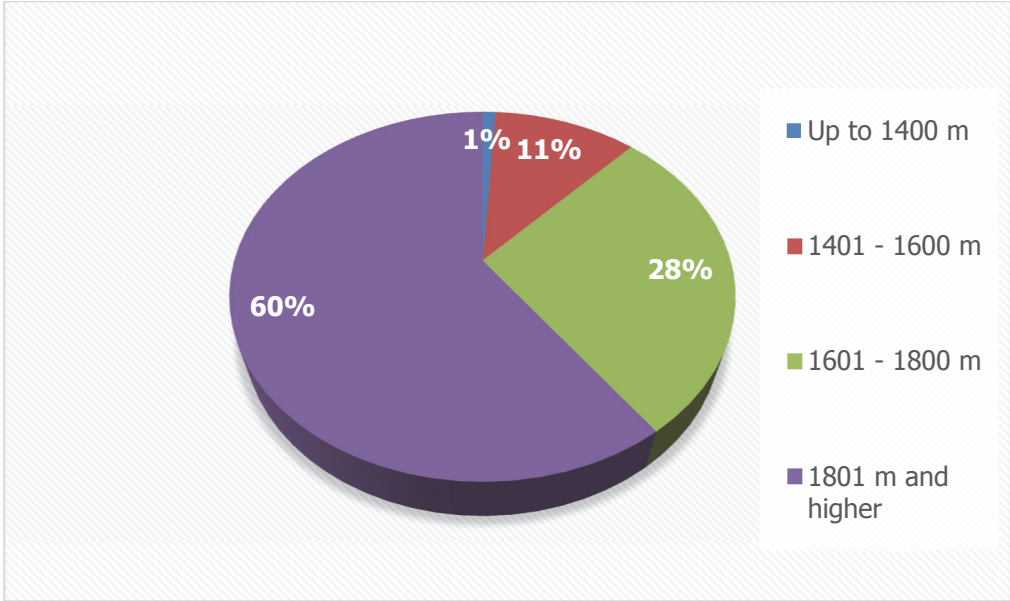
Pastures. Pastures in Armenia are among the most important natural resources for livestock and are especially valued in terms of overall biodiversity. The irregular and spontaneous use of these crucial resources cause lots of root ecological issues which effect all the economy in the area in a complex way: productivity of animals, consequently yield in agriculture, consequently the prices in the field, quality of food consumed by the population, and what is scarier, the huge risk of reducing the opportunity to maintain any potential resources for the future generation or even losing them at all for already the near future.

The issue stretches upon Syunik region and Sisian sub region in the same way and is of common importance throughout all Armenia.

To be more specific, using the available and crosschecked data upon pasture areas by regions and communities, we focused on the Pilot communities. The total area of pastures

there 48,344 ha. The figure below shows distribution of these areas separately by communities and settlements included:

Figure 13: Distribution of pastures by the Pilot communities of Sisian sub region, ha and %, as of 2016
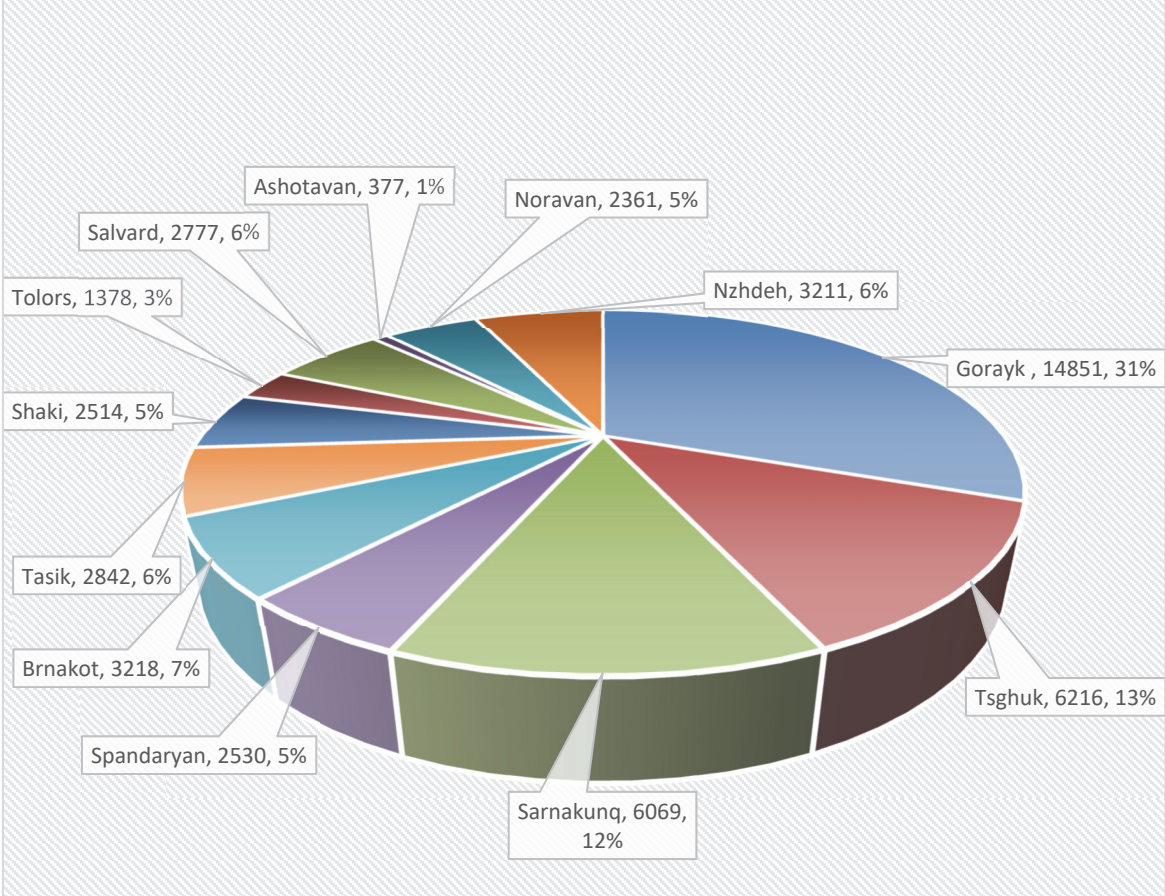
As obvious, Gorayk community with its settlements of Gorayk, Tsghuk, Sarnakunq and Spandaryan, possesses the largest share of pasture resources in the pilot region (61 % altogether).

For reducing risks of further deterioration of pastures and enhancing their potential use opportunities in the future as well, huge and tangible supporting interventions were launched in 2013 by international GIZ and local Strategic Development Agency NGO. Cooperating together, they created a model of effective use of pastures, involving regional administrative and local government bodies for achieving the common goal.

Pasture management plans, a professional guidebook for those plans were developed as well as special scheme maps were created per community and printed. A sample of the map is presented in Picture 7.

Water resources. The region of Syunik has also got watery rivers such as Vorotan and Voghji. Sisian Forestry lies in the basin of the middle stream of Vorotan river. It is starting from the West of Karabakh highlands and is the left tributary of Araks river. It is supplied by mized sources (50 % of the underground watters). Vorotan's tributaries are Aragiljur, Sisian, Shaghat, Ayri, Shaki and Loradzor. They are all mountanious waters, have V-shaped valleys, are fast-in-flow,

Picture 7: Map of Brnakot pasture management

landslide and form waterfalls (the most famous is Shaki waterfall).

Vorotan is 178 km long, and the basin is 5650 km^2. It has an irregular routine, is overflowing in spring and early summer (almost in 60 %).

In winter in the upper streams of the river ice phenomena is observed, and even freezing in a few placements.

Angeghakot, Tolors, Shamb and Spandaryan reservoirs were constructed over Vorotan, and Tatev, Shamb and Spandaryan hydroelectric stations are operating upon it.

Vorotan water is mostly used for irrigation. From the upper streams of Vorotan most of the river waters are moving to Arpa and nextly to Sevan.

There are also numerous small lakes (between Vorotan and Sisian ghats/ mountain passes), cold springs, like Shaki, Zorzor, Angeghakot, Sarnakunq, Zuygaghbyur, etc., and mineral waters line Sisian, Vorotan, Balaq, etc.

5.2 Experience and tendencies in of above-mentioned resources: best practices, habits and proved necessity for improvement

Syunik is one of the richest regions in natural wealth and minerals at all which have always been extracted here. The most important ones are ores of about 17 colorful such as copper, molybdenum, zinc, etc., and precious metals such as gold and silver as well as a full range of non-metal minerals (construction and facing stones, raw material for basalt, storages of limestone and combustible shale, marble, granite perlite, etc.) According to state statistics for 2015, the quantity of hazardous substances emitted into atmosphere from stationary sources per capita makes 63.5 kg while average indicator of RA is 42.9 kg. In this indicator Syunik is on the 4th place after Lori, Tavush and Kotayq regions (206.9 kg, 157.5 kg, 96.9 kg correspondingly). Payment for environment protection and environmental resources use per capita in the region makes 728.7 AMD, which is almost 1.4 times as low as the average indicator for the RA (1005.7 AMD).

As for payments for environment protection and use of natural resources per organization of the region, here Syunik has quite a significant share and makes 1273.3 AMD regardless the average for the RA is 773.8 AMD per organization. Here Syunik occupies the 4th place after Ararat, Vayots Dzor and Armavir regions.

It is quite encouraging that Syunik has one of the lowest indicators for disclosed violations of environmental protection legislation, 10.7 units per 100 ths. people in the region, which is far below the average indicator of the RA (29.0).

Regarding land use or pasture use, based upon the direct interviews with the mayors and responsible specialists, there are no special habits or rules among the rural population. They are used to irregular and unorganized approaches in grazing, watering or other activities related to the natural resources. Only during the last 3 years in at least 19 communities in Sisian subregion special mechanisms and models were developed. Due to intensive awareness raising activities, application of corresponding tools and high technologies as well as guidance by the best experts in the field some improvement of the situation is evident and can be a good pilot and example for all the othe rural communities throughout Armenia.

For regulations and improvements in the field, as mentioned previously, a special SNCO called Hayantar operates throughout Armenia with its "branches" in all the regions and sub regions. They are called Regional Forestry. For example, in Syunik region they have Kapan Forestry, Syunik Forestry and Sisian Forestry correspondingly with their surrounding forest area.

As all the details for Syunik Forestry and branches in areas have already been presented above, here contacts of Sisian Forestry follow:

"Sisian Forestry" Lands by Sub-branches
Address: Syunik Marz, Sisian
Tel: 0-2830 65 00
Director: Arkadi Arshakyan

There is also the RA Law upon Forests passed in 2005, through which main regulations of the field take place.

6. DEVELOPMENT PROJECTS TARGETING PILOT AREAS FUNDED OR/AND IMPLEMENTED BY INTERNATIONAL AND NATIONAL ORGANIZATIONS FOR THE PERIOD OF 2011 – 2016 YEARS AND ONGOING PROJECTS

6.1 Short descriptions of projects by implementing/funding organizations, targeted areas and running status (either completed or ongoing)

Being one of the regions granted with a huge potential of social and economic prosperity and development, Syunik is continuing to remain a focus and target for a lot of national and international organizations. For improvement in social-economic field and bringing solutions to the high priority issues investment, humanitarian and loan projects of about **26.71 billion AMD** [13]were implemented in the region through local and international institutions, foundations and charitable organizations, embracing almost all the communities of the region.

**Table 25:** Investments made by international and other organizations in Syunik region in 2015, ths. AMD

	Organization	Development projects	Humanitarian aid	Loan Projects	Total, ths. AMD
1	"Zangezur" Copper and Molybdenum Combine CJSC	2,468,362			2,468,362
2	"Agarak" Copper and Molybdenum Combine CJSC	1,000,000	49,177		1,049,177
3	"Dandy Precious Metals Kapan" CJSC	4,458,720	54,322		4,513,042
4	Swiss Agency for Development and Cooperation in Armenia	230,000			230,000
5	World Vision Armenia	4,217	108,484		112,702
6	"In state Management and Administration Company" CJSC	263,465			263,465
7	Armenian Regional Development Foundation	48,390			48,390
8	OSCE Yerevan	43,285			43,285
9	"Health Project Implementation Unit" State Agency of the Ministry of Health in RA	1,910,131			1,910,131
10	"Economic Development of Rural Areas" Projects Analysis and Administration Agency	88,588			88,588
11	Ardshinbank CJSC			2,873,500	2,873,500
12	Araratbank Open Joint-stock Company (OJSC)			243,100	243,100
13	Unibank CJSC			56,000	56,000
14	ACBA CREDIT AGRICOLE CJSC			3,400,000	3,400,000
15	VTB-Armenia CJSC			408,000	408,000
16	Armbusinessbank CJSC			734,600	734,600
17	ConverseBank CJSC			301,100	301,100

---

[13] According to the "Annual Report on Analysis of Social-economic Situation in Syunik Province, 2015" developed by Syunik Marzpetaran/Municipality

18	New Horizon Universal Credit Organization (UCO)			188,000	188,000
19	SEF International UCO			792,000	792,000
20	Aregak UCO			1,218,000	1,218,000
21	Finca UCO			1,492,800	1,492,800
22	Fast-Credit UCO			82,800	82,800
23	"Horvard Karagyozyan" Medical Charitable NGO		26,800		26,800
24	Little Bridge Social Charitable NGO	4,801			4,801
25	Center for Agribusiness and Rural Development, CARD Foundation	100,000			100,000
26	European Bank for Reconstruction and Development	322,655			322,655
27	Asian Development Bank	722,382			722,382
28	World Bank	3,012,027			3,012,027
	Total	**14,677,023**	**238,783**	**11,789,900**	**26,705,706**

According to the data above, it's worth to recognize the distribution shares of development, humanitarian and loan investments throughout the region for 2015.

Figure 14: Distribution of investments in Syunik region, %, 2015
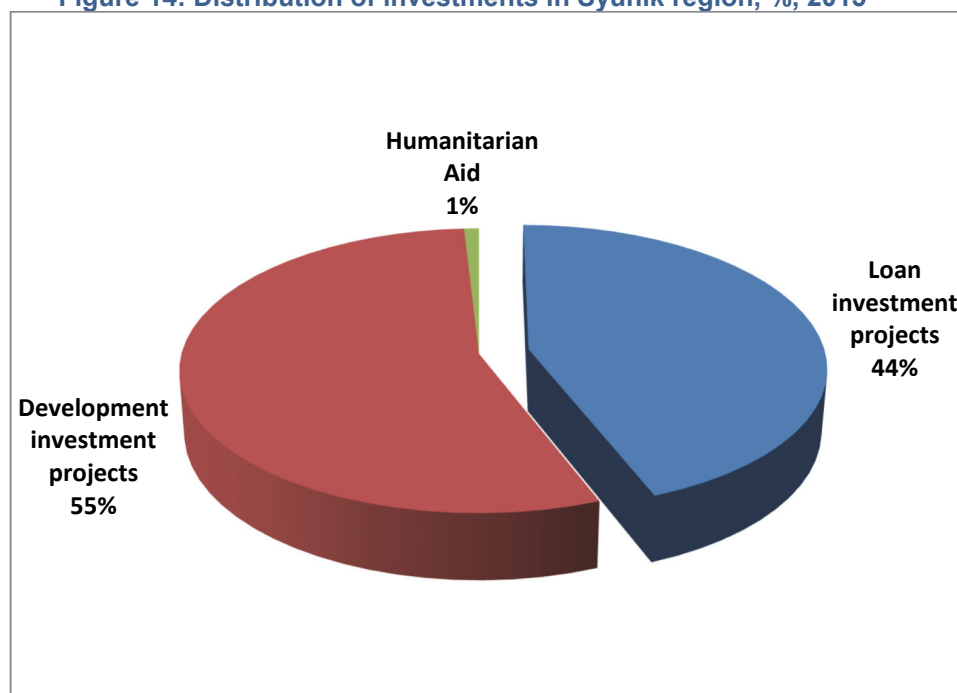
It's also interesting to observe what alterations have occurred in investment types in dynamic analysis for 2014 – 2015. In the figure below it's obvious that investments by development projects have drastically increased on the one hand and loans have decreased significantly on the other hand. Hopefully this is a praiseworthy fact proving that population in remote regions and communities is getting more support in their social economic life meanwhile reducing their debts, thus getting motivated to develop their economies more intensively and with less obstacles.

Figure 15: Investments by sources and directions, billion AMD, Syunik, 2014-2015
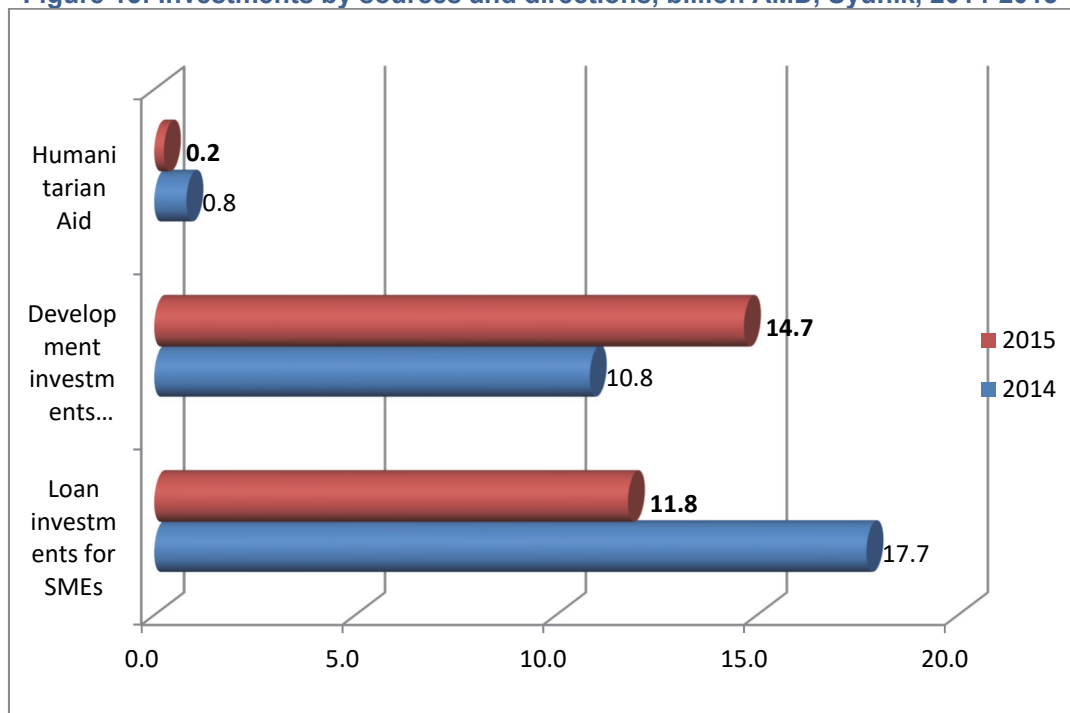
All the above-mentioned projects refer to the whole region of Syunik. As for Sisian sub region and the Pilot communities, mayor's offices mark out a few significant projects:

Table 26: Large-scale projects by implementing organizations, 2015

Project	Implementer	Effective Period	References
Piloting Pasture Management Plan in Selected Communities of Sisian sub region on the Basis of Pasture Monitoring Manual for Armenia, targeting 24 communities in Sisian	Strategic Development Agency NGO	2013 – up to date	
Sisian Area Development Programme including Health care, Education, Economic development, Civil society programmes.	World Vision Armenia	2004 - up to date	http://www.wvarmenia.am/en/adp/show/4
Support to Social Sector Reforms Project in 29 communities	Counterpart International	2014 - 2019	http://www.counterpart.org/support-to-social-sector-reforms/
Community Agricultural Resource Management and Competitiveness (CARMAC) projects (I and II)	"Agricultural Project Implementation Unit" (APIU) State Agency	2010 - 2020	http://www.arspiu.com/CARMAC.17.0.html?&L=0
Veterinary services improvement, training activities and Vet. Points.	CARD Foundation	2010 - 2012	http://card.am/

6.2 Best and worst practices: success stories and lessons learnt

During primary interviews with the community mayors, success and failure cases of intervening projects in the Pilot communities were discussed and discovered.

Strangely enough, there are communities where responsible staff or mayors hesitate to recall any development or supporting project or organization, although both secondary sources and specialists in the field tell us about tens of projects operating for the Pilot communities.

Based on experts' opinions experienced in these field, people tend to hide or attach less importance to the interventions accomplished expecting more assistance to their communities by other projects and organizations as well.

Hereby, based on the primary interviews with representatives of mayor offices, project interventions in terms of positive or negative results by communities can be described as follows:
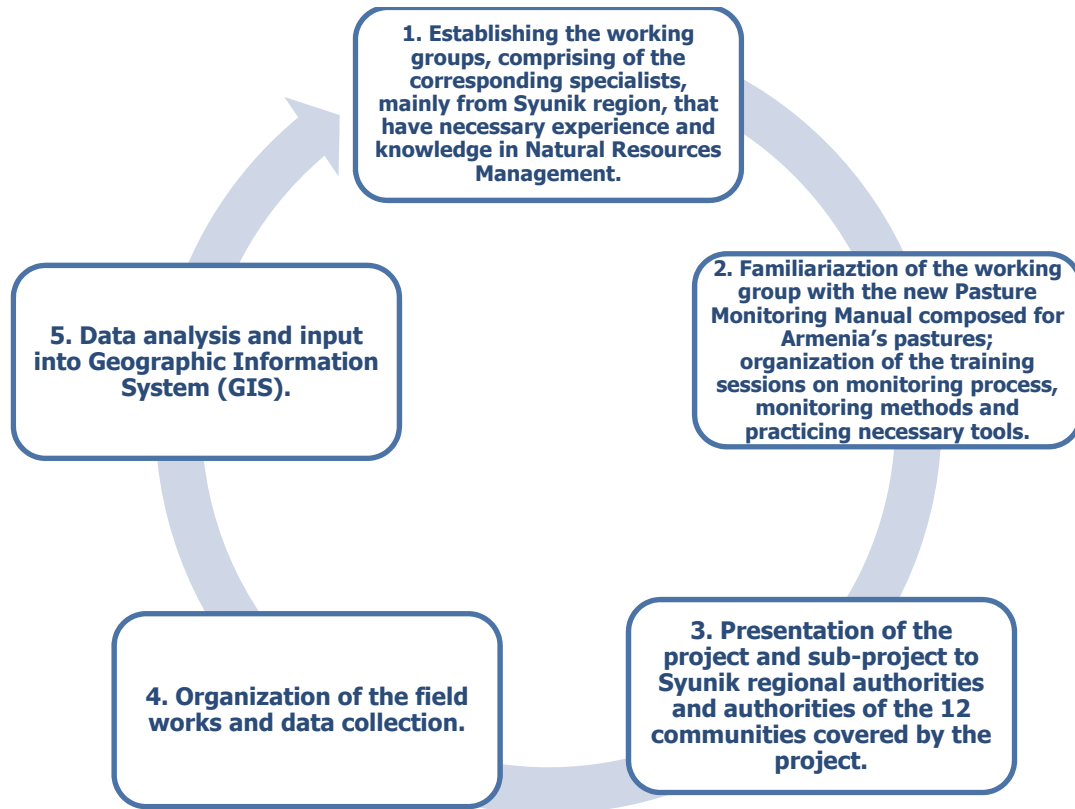
Table 27: Succeeded and failed projects upon rural development in the Pilot communities, direct interviews, 2011 - 2016

	Success	Failure
GORAYK	2012-2013, SDA NGO:- Within the Pasture Effective Management project a cooperative was established, a team was created for the project implementation and follow-up. Agricultural equipment and a computer were provided to the community within the project. 2012: 4 drinking-cans were established, funded by the community budget, 1 out of which in a remote pasture, and 3 of them in the community.	The computer provided/granted to the community by the cooperative was taken back for not filling/inputting the information in the system.
TSGHUK	2013, CARMAC, APIU: - project targeting animals grazing and pasture use. Construction of 3 water points, 2 out of which in 3 km and the 3rd one in 9 km distance from the community. Provision of agricultural equipment and machines, like mower, plow, clamp, etc.. Foundation for Social Investments and APIU: - Reconstruction of the community school	
SARNAKUNQ	World Vision Armenia, 2009: - reconstruction and equipment of the event house.	
SPANDARYAN	CARMAC, APIU: - Construction of water points in the pastures, due to which yield of the animals has increased and the hygienic characteristics of the animals has improved significantly.	
BRNAKOT	2014 – 2015, Agricultural Project Implementation: - Establishment of 4 drinking-cans (points) in the remote pastures. 2016, UN office in Armenia: - Tree planting will be held and a new garden will be established. 2011, SDA NGO: - Construction of the herdsman shelter with all its conveniences. 2012, SDA NGO: - Establishment of Veterinary Service Point. 2012, GIZ: Provision of a computer and a printer.	Reconstruction of the village secondary school which is remaining unfinished up to date.
TASIK	In 2015 the pastures of Tasik were occupying 3861 ha, but in 2016 some of Ashotavan pastures were handed in to Tasik, and the total area now is 4051 ha. 2014, SDA NGO: - 2 water points in remote and nearest pastures correspondingly. 2011, GIZ: - provision of computer technologies and a printer.	No failed projects.

SHAKI	APIU and SDA NGO: - establishment of water points in remote pastures. World Vision Armenia: - greenhouse building in the community (as an innovative project). APIU: - Establishment of a cooperative which was provided with a special machinery. The best success for the community is that the village is fully supplied with gas, the streets are asphalted and there is lighting at night.	The number of water points is not sufficient to the community. The greenhouse is not heated.
TOLORS	SDA NGO: - establishment of water points. World Vision Armenia: - greenhouse building in the community (as an innovative project) where cucumber and grossery are grown. World Vision Armenia, 2011: - lighting supply. World Vision Armenia: - there are special groups of children in the community, who receive presents annually.	A computer provided by GIZ was burnt (demaged by electricity).
SALVARD	2011, SDA NGO: - reconstruction of roads to the pastures. 2015, SDA NGO: - Establishment of a drinking can in a remote pasture: 2012, World Vision Armenia: - redecoration of a few classrooms in the village secondary school. 2011, SDA NGO: - Renovation of the milk collection point in the community. 2013, World Vision Armenia: - Redecoration of the kitchen in the culture house. 2014, Swiss Bank: - "Youth Employment Issues" project, in the result of which a youth room was built in the mayor's office, renovated, equipped and furnished, where classes were held on business planning and accounting.	
ASHOTAVAN	2012, World Vision Armenia and Counterpart International: - Redecoration and equipment/furnishing of the community kindergarten. 2012, Counterpart International: - Lightening the streets. 2013, SDA NGO: Establishment of drinking-cans/water points in pastures. 2011, GIZ: - Equipping the mayor's office with a computer and printer. 2016, Strategic Development Agency NGO – Reconstruction and improvement of roads to remote pastures. 2016, SDA NGO: Assistance in grazing activities with continuous procedures and sustainable follow-up.	No project has been implemented for fruit growing improvement
NORAVAN	2010, SDA NGO: - 2 water points in the pastures 2010, GIZ: - a computer and printer provided to the community.	The water currently points need repairment.
NZHDEH	2011, GIZ: - Equipping the mayor's office with a computer and printer, due to which work in mayor's office has become more effective and easier.	In 2015 drinking-cans were supposed to be established by the cooperative which has not yet been accomplished up to date.

As pasture use in the Pilot communities is one of the most important components for our biodiversity study procedures, it's interesting and informative to review best practices and results in the field achieved bay local and international organizations.

The following interventions were implemented in 24 target communities (including all the Pilot communities) by SDA NGO in cooperation and funded by GIZ and Swiss Agency for Development and Cooperation.

1. Establishing the working groups, comprising of the corresponding specialists, mainly from Syunik region, that have necessary experience and knowledge in Natural Resources Management.

2. Familiariaztion of the working group with the new Pasture Monitoring Manual composed for Armenia's pastures; organization of the training sessions on monitoring process, monitoring methods and practicing necessary tools.

3. Presentation of the project and sub-project to Syunik regional authorities and authorities of the 12 communities covered by the project.

4. Organization of the field works and data collection.

5. Data analysis and input into Geographic Information System (GIS).

In November 2015, within the scope of the project "Piloting Pasture Management Plan in Selected Communities of Sisian on the basis of Pasture Monitoring Manual", a study of the area of pasture use was conducted in 19 project communities of Sisian subregion.

Key objectives of the study include identification of the below-mentioned in the target communities:

1. Organization of pasture use and current issues.

2. Farmer's awareness on the use of procedure for sustainable pasture use.

3. The importance and significance of rotational/plot grazing.

4. Potential impacts of the use of pasture management procedure.

19 out of 24 communities (Brnakot, Nzhdeh, Sarnakunk, Tolors, Hatsavan, Bnunis, Tasik, Akhlatyan, Balak, Darbas/Shamb, Shaghat, Salvard, Ashotavan, Vaghatin, Lor, Angeghakot, Noravan, Ishkhanasar, Torunik) involved in the project amended pasture management plans of their communities according to the "Guideline for Development and Implementation of Sustainable Pasture and Natural Grassland Plans", which was based on the initial assessment of pastures using the methodology of the "Pasture Monitoring Manual, Armenia".

The amended pasture management plans of communities havebeen introduced since May 2015. The introduction of sustainable pasture management procedure led to the inclusion of around 42,135 ha of state- and community-owned pastures into the pasture use calendar schedules. At present, out of the total pasture areas registered in management plans and in the administrative territories of 19 communities, sustainable pasture use (management) is practiced in around 20,980 ha of nearby and remote pastures,5 which fully meets the demand for pasture area required for the cattle unit (CU) registered in communities throughout the entire grazing season in line with the pasture condition index (PCI) and allowable grazing pressure (AGP).

Within the first year of using pastures with updated management plans, the total number of livestock using target community pastures made around 13,203 CU. According to the survey of FHs, over the reviewed period the number of large cattle grazing in the pastures of 19 communities during the grazing season was estimated more than 70% of existing animals, including 80% of milk cows and 72%3 of beef/feeder animals. As a whole, in 2015 the pasture was used for 9,400 large animals, of which 4,500 cowsand 2,600 breeding large cattle.

Here are the tangible results of the post-intervention study through a large-scale survey among local farming houses:

Figure 16: Methods applied by farming household after pasture management improvements, %, late 2015
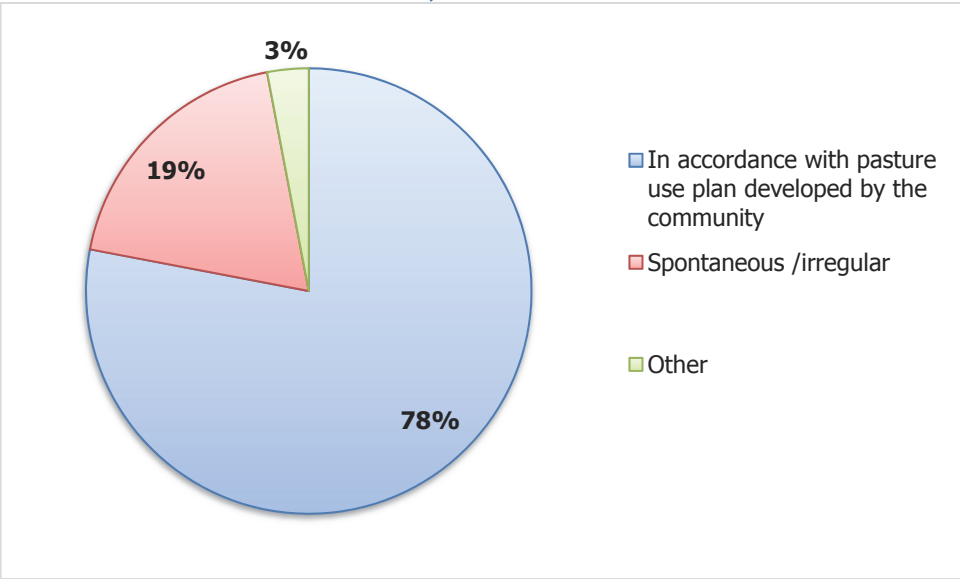
7. Conclusions

Summarizing the data collected, analyzed and covered in this report, Syunik Region has lots of limitations for ordinary and regular development in socio-economic life. The main limitations generate from the environmental inconveniences in terms of the distance from the capital, mountainous landscapes and lack of infrastructures.

Despite the fact that Syunik is one of the mostly targeted regions by international and national organizations within a variety of development projects, it still remains one of the most vulnerable areas regarding its access to large markets for agricultural products realization and introducing its strengths and opportunities with the real full potential it actually has.

What is appreciable here, that lots of piloting projects have been implemented here, and after proving success it, anyway, contributed to the change of mental approaches by the local government bodies as well as farmers.

This conclusion can partially be based upon the household survey implemented by SDA NGO after piloting pasture management model in 19 communities, where 7 out of the Pilot communities (Brnakot, Nzhdeh, Tolors, Tasik, Salvard, Ashotanavan, Noravan) and Sarnakunq settlement within the current Project are successfully applying the improved manners and tools when using the near and remote pastures.

This also encourages other regions and sub regions to take an example and involve investments for pasture management to bring the best practice of Syunik into their routine for the overall development of agriculture, ecology and hence economy overall.

However, in Syunik there are still communities which need a thorough follow-up for sustainable use of pasture management tools. Hereby, further extension of cooperation between SDA NGO and GIZ in this regard is highly desirable.

Forest resources maintenance should also be of a huge significance for the region. Considering the fact that the latest updates of Sisian Forestry were implemented in the late 1980s, particular measures should be taken by national and international organizations to get a more realistic updated image of the situation and act correspondingly for rational use of the resources.

8. Reference List

1. Armenian National Statistics service, Regional statistics: http://armstat.am/am/?nid=50

2. Syunik Municipality, official web-site: http://syunik.mtad.am/

3. Analysis of Socio-economic Situation in Syunik Region of the RA for 2015, Report, Syunik Municipality, official web-site: http://syunik.mtad.am/socio-economic-situation/

4. Sisian town, official web-site: http://sisian.am/Pages/Home/Default.aspx

5. Armenian Legal Information Center, http://www.arlis.am/

6. "Agriculture Project Implementation Unit" state agency of the RA Ministry of Agriculture, http://www.arspiu.com/home.0.html?&L=0

7. Sisian Forestry Management Plan, Hayantar SNCO, Official web-site: http://hayantar.am/%D5%AF%D5%A1%D5%BC%D5%A1%D5%BE%D5%A1%D6%80%D5%B8%D6%82%D5%B4/

8. Promoting web-page for Sisian town Fly Sisian, created with the support of World Vision Armenia, http://flysisian.am/index.php?lang=hy

9. http://www.armgeo.am/armenian-reservoirs/

10. http://syunikonline.am/4569.html

11. http://www.armecofront.net/lrahos/vtangavor-pochambarner/

12. http://am.geoview.info/reservoir_geghi,25116363p

13. Initial Assessment of Potential Impact of Pasture Management Procedure on the Area of Animal Farming, Report, 2015, SDA NGO

14. "Piloting Pasture Management Plan in Selected Communities of Sisian subregion Based on Pasture Monitoring Manual for Armenia", Report, 2015, SDA NGO

15. Pasture Monitoring Model Testing, Report, 2013, SDA NGO

16. Field work analysis upon interviews with mayors and representatives of the mayor's offices

17. Community Registers of Population Data

18. Community Registers of Livestock Data

APPENDIX 1. Field Work: Guidelines _ Syunik Region

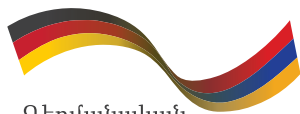|	Data required	Info type/ Method	Refer to the period of	Info source/ Informant	1. Gorayk cluster[14]	2. Noravan	3. Shaki	4. Tolors	5. Ashotavan	6. Tasik	7. Nzhdeh	8. Brnakot	9. Salvard	Syunik (Sisian) Region altogether
	Respondent: Community, First Name, Last Name, Position, Contacts				**Checklist for communities**									**Checklist for the region**
1.	Actual and registered numbers of households per community separately and per region totally	Hard copies of household journals	2011 – 2016 (including latest updates up to November, 2016)	Mayors and Municipality										
2.	Maps of lands, pastures, natural resources and any type of map related to environmental, land resources and natural resources in the in case available (mayors usually have them hanging in their rooms)	Scans/photos + hardcopies of guidebooks for maps (if available)	2015 – 2016 (latest updated versions)	Mayors and Municipality										

---

[14] Gorayk, Sarnakunq, Tsghuk and Spandaryan settlements included

#	Item	Source/Format	Period	Responsible
3.	Maps of lands, pastures, natural resources and any type of map related to environmental, land resources and natural resources	Detailed interview + Scans/photo, figures, verbal description or charts (if available)	2011 – 2016, Significant changes and facts	Mayors and related staff, Municipality for the region
4.	Actual data on migration status and directions per community separately and region	Interviews and hard copies	2011 – 2016, Latest updates	Mayors
5.	Livestock quantity per community/ region (including average per household). Grazing habits in the community/region	Hard copies of journals, Interviews	Latest updates up to November, 2016 Variations during 2011 - 2016	Mayor's office and responsible staff
6.	Small cattle (sheep and goats) quantity per community/ region	Hard copies of journals	Latest updates up to November, 2016	Mayors' office
7.	Key improvements and activities, supporting projects for land use and pasture management for livestock and small cattle	Interviews, lists & descriptions, quantity indicators if available	2011 – 2016, latest updates, ongoing and planned ones	Mayors and responsible staff
8.	Key projects for land use	Interviews, lists &	2011 – 2016, latest updates, ongoing and	Mayors and responsible

#				
		descriptions, quantity indicators if available	planned ones	staff
9.	Projects for water exploitation in agriculture, both for livestock and small cattle	Interviews, lists & descriptions, quantity indicators if available	2011 – 2016, latest updates, ongoing and planned ones	Mayors and responsible staff
10.	Projects for water exploitation	Interviews, lists & descriptions, quantity indicators if available	2011 – 2016, latest updates, ongoing and planned ones	Mayors and responsible staff
11.	Innovative services/ products in the communities/region developed and established by projects (cross -check if necessary)	Interviews with notes/ remarks[15]	2011 - 2016	Mayors and responsible staff
12.	Special cases, success and/or failure stories of projects in the area, tangible impacts	Interviews with notes/ remarks	2011 – 2016 or beyond if necessary/ important in terms of influences	Mayors and responsible staff

[15] Proof documents/hard copies are desirable in case available

13.	Significant facts/ improvements in markets of agricultural production and services, key partners and value chains (e. g. milk, meat, (agro)tourism)	Interviews with notes/ remarks correspondin gly per field of production/s ervice	2011 – 2016 or beyond if necessary/ important in terms of influences	Mayors and responsible staff						
14	Initial discussion of community/sub-region booklet concept	Interviews with notes/remark		Mayors and responsible staff						