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Biosphere Reserve in Kakheti Region as a Model for Inclusive and Sustainable Growth and do not
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CONSULTANCY SERVICE CONTRACT No. 021RECC/G/EU-2-2—SRV-08-5233

**THEMATIC STUDY ON SOCIAL-ECONOMIC DEVELOPMENT FOR ESTABLISHMENT OF THE VASHLOVANI
BIOSPHERE RESERVE TO THE EU FINANCED PROJECT “ESTABLISHMENT OF VASHLOVANI BIOSPHERE
RESERVE IN KAKHETI REGION AS A MODEL FOR INCLUSIVE AND SUSTAINABLE GROWTH”**

July, 2020

Abbreviations

AA	Appropriate Assessment
APA	Agency of protected areas of Georgia
ASCI	Areas of Special Conservation Interest
CENN	Caucasus Environmental NGO Network
CSOs	Civil society organizations
EU	European Union
Geostat	National statistic office of Georgia
GOG	Government of Georgia
GOGC	Georgian Oil and Gas Corporation
IBAs	Important Bird and Biodiversity Areas
IUCN	International Union for Conservation of Nature
LA	Local Authority
LAG	Local Action Group
MoEPA	Ministry of Environment Protection and Agriculture
NACRES	Centre for Biodiversity Conservation & Research
NAM	National Agency of Mines
NP	National Park
PA	Protected Area
RECC	Regional Environmental Centre for the Caucasus
SAOG	State Agency of Oil and Gas
SPA	Special Protection Areas for birds
TJS	Transboundary Joint Secretariat
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WWF CauPO	WWF-Caucasus Programme Office

List of Tables

Table 1: Main types of land use – Dedoplistskaro municipality.....	9
Table 2: Structure of the agricultural lands. Source: Local Information-Consultation Service of MoEPA	10
Table 3: Protected areas within Dedoplistskaro municipality.....	12
Table 4: Emerald network sites – Dedoplistskaro municipality	18
Table 5: Special Protection Areas (SPA) for birds in Dedoplistskaro municipality. Source: Ilia State University.....	20
Table 6: State forest fund. Dedoplistskaro municipality. Source: National Agency of Public Registry	21
Table 7: Hunting farms. Source:(National Report on the State of the Environment of Georgia 2014 - 2017, 2019)	23
Table 8: Oil and gas operations. XII license block. Dedoplistskaro municipality. Source: “Frontera Resources Georgia Corporation”	25
Table 9: Roads of state importance. Dedoplistskaro municipality. Source: Road Department of Georgia	26
Table 10: Irrigation systems operating in Dedoplistskaro municipality to 1990. Source: (UNDP Georgia, 2014)	28
Table 11: Water Reservoirs functioning in Dedoplistskaro municipality to 1990. Source: (UNDP Georgia, 2014)	28
Table 12: Resorts. Dedoplistskaro municipality. Source: GoG Resolution #428. 3.07.2014	30
Table 13: N of Population according different zones of proposed biosphere reserve	34
Table 14: Settlements. Dedoplistskaro municipality	35
Table 15: Ethnic Structure. Dedoplistskaro Municipality. Source: GeoStat (Census 2014).	36
Table 16: Number of internal migrants in Dedoplistskaro municipality according to urban-rural settlements and previous permanent residence. Source: GeoStat (2014 census).....	37
Table 17: Number of emigrants from Dedoplistskaro municipality by urban-rural settlements and current country of residence. Source: GeoStat (2014 census).....	38
Table 18: Healthcare facilities. Territory of Dedoplistskaro municipality	38
Table 19: Schools. Territory of Dedoplistskaro municipality.....	39
Table 20: Areas of the proposed zones of the Vashlovani Biosphere Reserve.....	53
Table 21: Allowed activities within traditional use and visitor zones of VNP.....	56
Table 22: Licensed areas, intersect with the buffer zone of proposed BR.....	59
Table 23: List of stakeholders	62
Table 26: Licenses for use of the natural resources. Dedoplistskaro municipality. Source: National Agency of Mines (NAM).....	70
Table 27: Population by Administrative-Territorial Units, Gender and Age Groups. Dedoplistskaro Municipality. Source: GeoStat (Census 2014).....	74
Table 28: Age groups of population by urban-rural settlements and gender. Dedoplistskaro Municipality. Source: GeoStat (Census 2014).	75

List of Figures

Figure 1: Target area of the study.....	7
Figure 2: Dedoplistskaro Municipality	8
Figure 3: Distribution of different types of lands.....	11
Figure 4: Natural and Semi-natural areas	12
Figure 5: Protected Areas (Source: APA).....	13
Figure 6: Pastures within Vashlovani NP. Source: (UNDP. NACRES, 2015).....	15
Figure 7: Samukhi planned protected area (TJS. WWF CauPO. 2019).....	16
Figure 8: Schematic presentation of the rangeland use, Tush sheep flocks location and cycle (G. Gintzurger, 2012). Source: (NACRES, 2013)	17
Figure 9: The main migration area (TJS. WWF CauPO, 2020)	17
Figure 10: Emerald Network. Dedoplistskaro municipality. Source: APA	19
Figure 11: Special Protection Areas (SPA) for birds. Dedoplistskaro municipality. Source: Ilia State University.....	20
Figure 12: State forest fund under the National Forest Agency. Dedoplistskaro municipality	22
Figure 13: Licenses and Deposits. Dedoplistskaro municipality. Source: NAM.....	24
Figure 14: Location of the license blocks.....	25
Figure 15: Oil and gas operations. XII license block. Dedoplistskaro municipality. Source: “Frontera Resources Georgia Corporation”	26
Figure 16: Cultural heritage objects. Dedoplistskaro municipality. Source: National Agency for Cultural Heritage Preservation. Georgia.....	31
Figure 17: Dali Reservoir. Source: (Tsitelashvili, Guliashvili, & Bitsadze, 2020).....	32
Figure 18: Dedoplistskaro municipality - Population	34
Figure 19: Age-Sex structure of the population. Dedoplistskaro Municipality	36
Figure 20: Economic structure. Dedoplistskaro municipality. Source: (Plan of Local Economic Development. Dedoplistskaro Municipality. Georgia, 2019)	40
Figure 21: Visitors Statistics to Protected areas in Dedoplistskaro municipality (2010-2019). Source: APA	43
Figure 22: Distribution of visitors by months. Source: APA.....	43
Figure 23: Distribution of visitors by gender (2016-2017). Source: APA.....	44
Figure 24: Distribution of visitors by domestic and foreign visitors (2016-2017). Source: APA	44
Figure 25: Total revenues from ecotourism services in protected areas of Dedoplistskaro municipality (2010-2019). Source: APA	45
Figure 26: Revenues received by the local population in the vicinity of the Vashlovani NP. (2016-2019). Source: APA	45
Figure 27: Propose zonation of Vashlovani Biosphere Reserve	53
Figure 28: Distribution territory of the proposed biosphere reserve by different zones.	54
Figure 29: Core zone of proposed BR of Vashlovani	55
Figure 30: Land tenure along north-east border of Core zone and within planned Eldari Plain Multiple Use Area.	57
Figure 31: Proposed buffer zone along north-east of the Core zone.....	58
Figure 32 Intersection of licensed areas with buffer zone.	59

Table of Contents

Abbreviations	1
List of Tables	2
List of Figures	3
Section 1. Introduction	6
Section 2. Land use	8
2.1 General Background	8
2.2 Land use.....	8
2.2.1 <i>Agricultural lands</i>	10
2.2.2 <i>Natural and semi-natural areas</i>	11
2.2.3 <i>Natural Resources</i>	23
2.2.4 <i>Urban and Recreation and resort areas</i>	26
2.2.5 <i>Water bodies</i>	31
2.3 Gender aspects of resource management	32
Section 3. Human Population	34
3.1 Demography.....	34
3.2 Sex-Age Structure	36
3.3 Ethnic and religion structure	36
3.4 Migrations	37
3.5 Health Care and Education	38
Section 4. Potential for sustainable development	40
4.1 Local Economic Analysis	40
4.2 Potential for sustainable development	41
4.3 Tourism	42
4.4 Agriculture	48
4.4.1 <i>General background</i>	48
4.4.2 <i>Farming practices</i>	48
4.4.3 <i>Livestock</i>	49
4.4.4 <i>Main challenges</i>	50
4.4.5 <i>Potential impacts on proposed biosphere reserve objectives.</i>	51
Section 5. Recommendations for zoning	53
5.1 Core zone	54
5.2 Buffer zone.....	55
5.3 Transition zone.....	59

Section 6. Sustainable Development priorities and objectives of the biosphere reserve	61
6.1 Main objectives of the proposed BR.....	61
6.2 Main stakeholders	61
Section 7. Research and Monitoring	64
Section 8. Conflicts.....	65
Section 9. Main measures / actions for sustainable development	66
9.1 Sustainable tourism.....	66
9.2 Sustainable agriculture.....	66
9.3 Crosscutting issues.....	67
Bibliography	69
Annexes	70
Annex I – Licenses for use of the natural resources.	70
Annex II – Cultural Heritage Sites.....	72
Annex III – Business Register	73
Annex IV – Demography.....	74

Section 1. Introduction

This report forms the deliverable under the contract between Irakli Kobulia (Social-Economic Expert) and REC Caucasus made in the framework of the EU financed project "Establishment of Biosphere Reserve in Kakheti region as model for inclusive and sustainable growth at local level" is being implemented by Leading Organisation - Dedoplistskaro Municipality and its Project Partner - The Regional Environmental Centre for the Caucasus (REC Caucasus).

The overall objective of the Project is to improve living conditions and quality of life of local communities in Kakheti region due to inclusive and sustainable growth and sustainable management of natural resources at local level through establishment of Vashlovani Biosphere Reserve in Kakheti region within administrative boundaries of Dedoplistskaro Municipality.

Specific objective of the Project is Establishment of Vashlovani Biosphere Reserve in Kakheti region as model for inclusive and sustainable growth at local level with increased role and participation of LA in multilevel governance and cross-scale coordination between national, regional and local levels. Main activities of the Project include: preparation of documentation for BR International Nomination with UNESCO, trainings for LA administration at local, inter-municipal and regional levels.

The scope of work for social-economic expert is defined by the ToR and is defined as follow: preparation of thematic study on social-economic characteristics and options for sustainable development of the planned Vashlovani Biosphere Reserve.

The present report presents the results of the above-mentioned task. The report will serve as a practical narrative guide to prepare and finalize UNESCO's Biosphere Reserve nomination form¹ and 5-year Management Plan for planned Biosphere Reserve.

Target Area

The target area of the study covers Dedoplistskaro municipality of Kakheti Region. Municipality is located in the South-Eastern part of Georgia and historically and geographically belongs to the Kakheti region. See. Figure 1.

¹ UNESCO/MAB 2013. BIOSPHERE RESERVE NOMINATION FORM.

http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/biosphere_reserve_nomination_form_2013_en.pdf

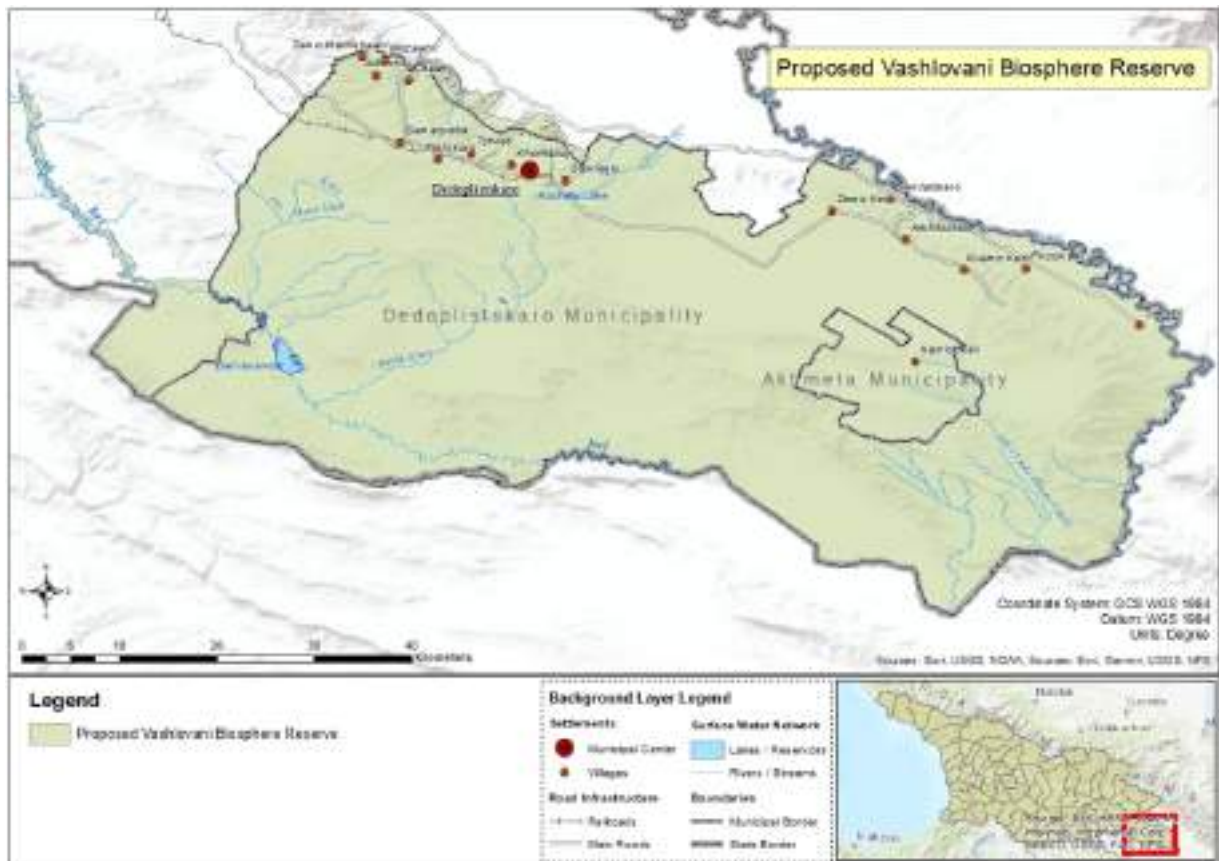


Figure 1: Target area of the study

Section 2. Land use¹

2.1 General Background

Dedoplistskaro municipality is located in the farthest south-east part of the territory of Georgia. It is the third largest in the country and one of the richest in terms of per capita agricultural land. The area of the municipality is 2,532 km² and it occupies 22% of the territory of Kakheti region (see. Figure 2). Most of the municipality is located at 450-700 m a.s.l. on the elevated plateau (Iori plateau) between the riverbeds of the Alazani and the river Iori. The lowest point of the territory is 90 m a.s.l. and it is located near the Mingechauri reservoir, close to the influx of the river Iori. The highest point of the plateau is located on the mount Nikortsikhe (1,001 m a.s.l.), south from town Dedoplistskato.

Dedoplistskaro Municipality borders: to the west and northwest – Signagi Municipality and the border of Dedoplistskaro municipality in the south, east and northeast coincides with the state border of Georgia-Azerbaijan.

The territory of the municipality is characterized by a dry subtropical climate with long dry hot summers and relatively cold winters. Due to a warm and dry climate, the municipality territory severely lacks permanent rivers. The hydrological network is rarely developed (just only in some areas of the municipality) and mostly it is represented with a network of dry ravines and gorges.



Figure 2: Dedoplistskaro Municipality

2.2 Land use

Historically and geographically, municipality belongs to the Kakheti region. As it was already mentioned the municipality takes an area of 22% of Kakheti region and it is the biggest

¹ Based on chapter 9

Land ownership peculiarities

In the context of Dedoplistskaro, following circumstance should be mentioned, specifically - within the territory of the municipality, there are lands that were attached to other districts¹ and villages during Soviet period (including Telavi, Signaghi, Tianeti, and Dusheti districts), over which these lands were distributed during the land reform process. Accordingly, in the process of registration of land plots in these areas, the National Agency of Public Registry checks and verifies the documents submitted by the applicant in the relevant municipality.

municipality in the region. At the same time, it is least populated among the other municipalities of Kakheti region.

Traditionally Dedoplistskaro is an agrarian municipality and was distinguished by the crop production throughout the country.

According to the information provided by the National Agency of Public Registry, the total area of Dedoplistskaro municipality is 251,952 ha, of which 12,290 ha is the territory of Akhmeta municipality.

From different land-use type, represented on the territory of the municipality, the following main types of land use should be mentioned:

- Agricultural lands
- Natural and semi-natural areas (different category protected areas)
- Natural resources extraction (mining) areas
- Urban areas

Below, Table 1 presents detailed information on the main types of land use identified in Dedoplistskaro municipality.

Table 1: Main types of land use – Dedoplistskaro municipality

Land use type		Area (ha)	Share in the total area of the municipality (%)
Agricultural lands	Cropland	49,402.50	19.53
	Perennial crop	1,777.50	0.70
	Grassland	104,167.00	41.19
	Total	155,347.00	61.42
Natural and semi-natural areas	Protected areas	40,324.00	15.94
	Proposed emerald site (Kotsakhura ¹ - GE0000051)	29,821 ²	11.79
	State Forest Fund outside protected areas	13,827.00	5.47
	Total	83,972.00	33.20
Natural resources extraction (mining) areas	Mineral resources	127.70	0.05
	Oil and gas operations	18,000.00	7.12
	Total	18,127.70	7.17
Water bodies	Natural lakes and artificial reservoirs	616.00	0.24
Recreation and resort areas	Climate resort - Arkhiloskalo	Data does not exist	
	Resort – Mlashe Tba (Salty lake)		
Urban areas	Town		
	Villages		
	Line infrastructure		
	Total (urban and recreational)		

It should be mentioned that currently, Dedoplistskaro municipality does not have any spatial planning document. Also, such a document has not been developed in previous years¹.

¹ <https://natura2000.eea.europa.eu/Emerald/SDF.aspx?site=GE0000051&release=2>

² 38 446,9 მათ შორის დედოფლისწყაროს მუნიციპალიტეტის ფარგლებში - 29 821 ჰა

Below presented the description of each type of land-use, presented within the Dedoplistskaro municipality.

2.2.1 Agricultural lands

Dedoplistskaro is known by its comparatively large area of agricultural land, especially designated for cyclical crops. Both, per household and per person as well as according to the area of average household Dedoplistskaro municipality significantly exceeds the average in land allocation on other parts of Georgia.

The total area of agricultural land is 155,374 hectares. Agricultural lands mainly represented by arable lands and pastures. Detailed information about agricultural land structure within Dedoplistskaro municipality (including Kasristskali community which belongs to Akhmeta municipality) is presented below, see Table 2.

Table 2: Structure of the agricultural lands. Source: Local Information-Consultation Service of MoEPA

	Arable lands (ha)	Perennial plants (ha)	Pastures and hayfields (ha)	Total
Dedoplistskaro municipality	47,197.50	1,772.50	65,189.00	114,159.00
Kasristskali community (Akhmeta)	2,205.00	5.00	39,005.00	41,215.00
Sum	49,402.50	1,777.5	104,194.00	155,374.00

Distribution of different land types is given below, Figure 3.

It is clear from the diagram that in the territory of Dedoplistskaro, most of the lands (more than 67%) are pastures and hayfields. The arable land occupies almost 32% (31.80%) of the agricultural lands. Distribution of sow land under annual crops in Dedoplistskaro demonstrates that municipality is evidently specialized on the production of two of them – wheat and sunflower. Maize, contrary to the general situation in the country accounts for a small amount of total arable lands. High value products, like garden produced vegetables, is also minimal. It should be noted that potato, which plays an essential role in food security in Georgia, occupies a very small area in the municipality.

¹ The land-use plan of village Arkhiloskalo is just one exception, which was developed in 2019 under the framework of the project “Applying Landscape and Sustainable Land Management (L-SLM) for mitigating land degradation and contributing to poverty reduction in rural areas of Kvemo Kartli and Kakheti regions”, implemented by REC Caucasus.

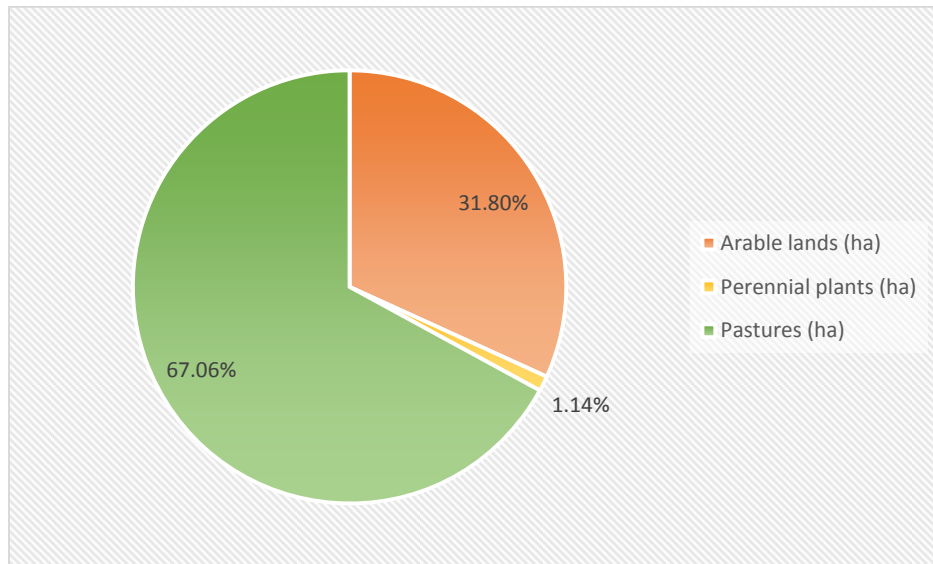


Figure 3: Distribution of different types of lands

Perennial crops, which took a comparatively small portion of agricultural lands (slightly more than 1%), mainly presented by vineyards (90% of the perennial plants). The rest is mainly represented by olive oil, almonds, and walnuts.

Regarding ownership of the agricultural lands, it should be mentioned that at present, the land is in private and state ownership. The state-owned land is governed by the local self-government or by the Ministry of Economy and Sustainable Development. Currently, there is no state control of the management of private land in place. Also, it should be emphasized that there are many cases, in which private people traditionally own land, but do not have any type of documents proving the ownership.

2.2.2 Natural and semi-natural areas

A major part of the natural and semi-natural territories located within the municipality of Dedoplistskaro are mainly included in the protected areas of various categories, as well as in the proposed emerald site and the state forest fund. Figure 4.

Below is given the description of each above-mentioned categories, presented within the target area.

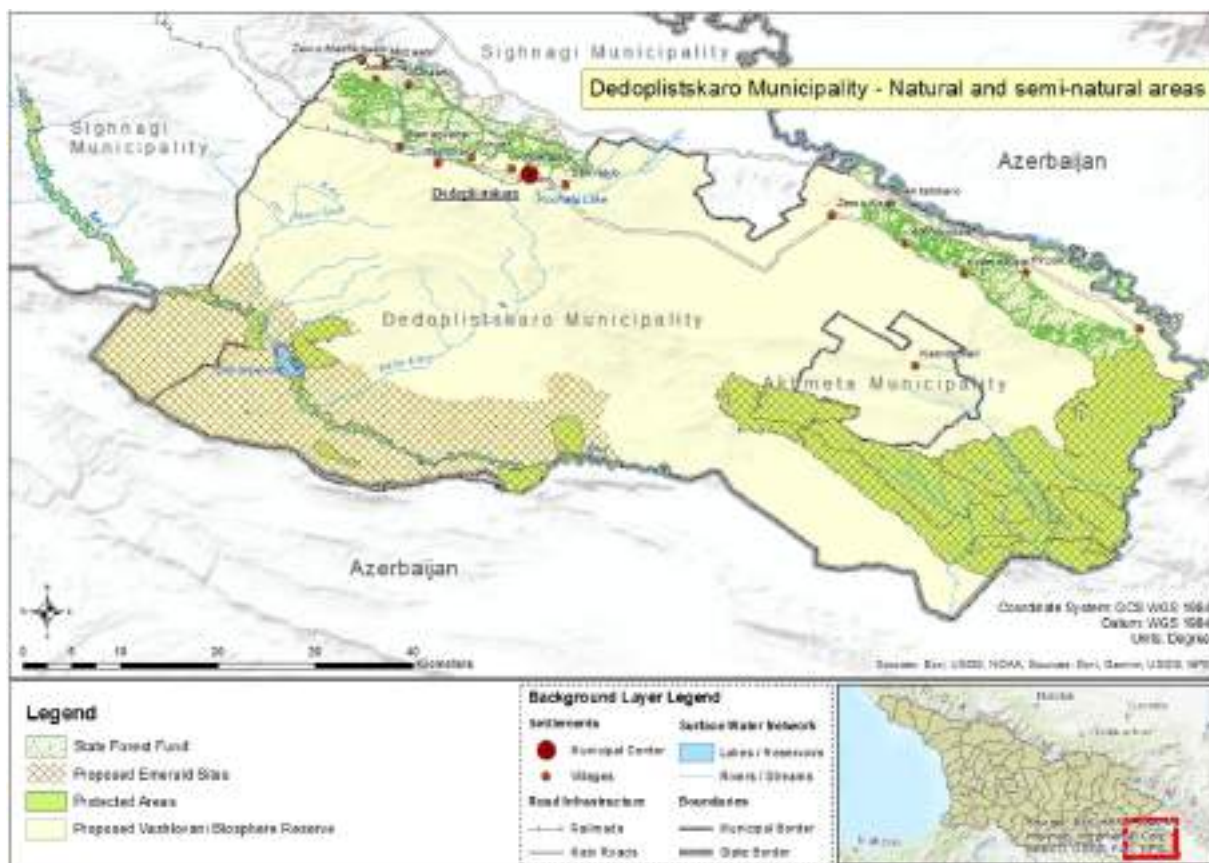


Figure 4: Natural and Semi-natural areas

2.2.2.1 Protected areas

Currently, several protected areas of various categories are represented on the territory of Dedoplistskaro (see Figure 5). The Table 3 below provides information on the territories and internal zoning of these protected areas.

Table 3: Protected areas within Dedoplistskaro municipality

Protected area	IUCN Category	Zoning	Area (ha)
Vashlovani Strict Nature Reserve	I		9,962
Vashlovani National Park	II		25,021
		Strict protection zone	1,930
		Recovery zone	448
		Traditional use zone	22,539
		Visitor zone	101
		Administrative zone	3
Takhti-Tepha Natural Monument	III		10
Artsivi (Eagle) Gorge Natural Monument	III		98
Alazani Floodplain Forest Natural Monument	III		201
Chachuna Managed Reserve	IV		5,032
Total area of protected areas			40,324

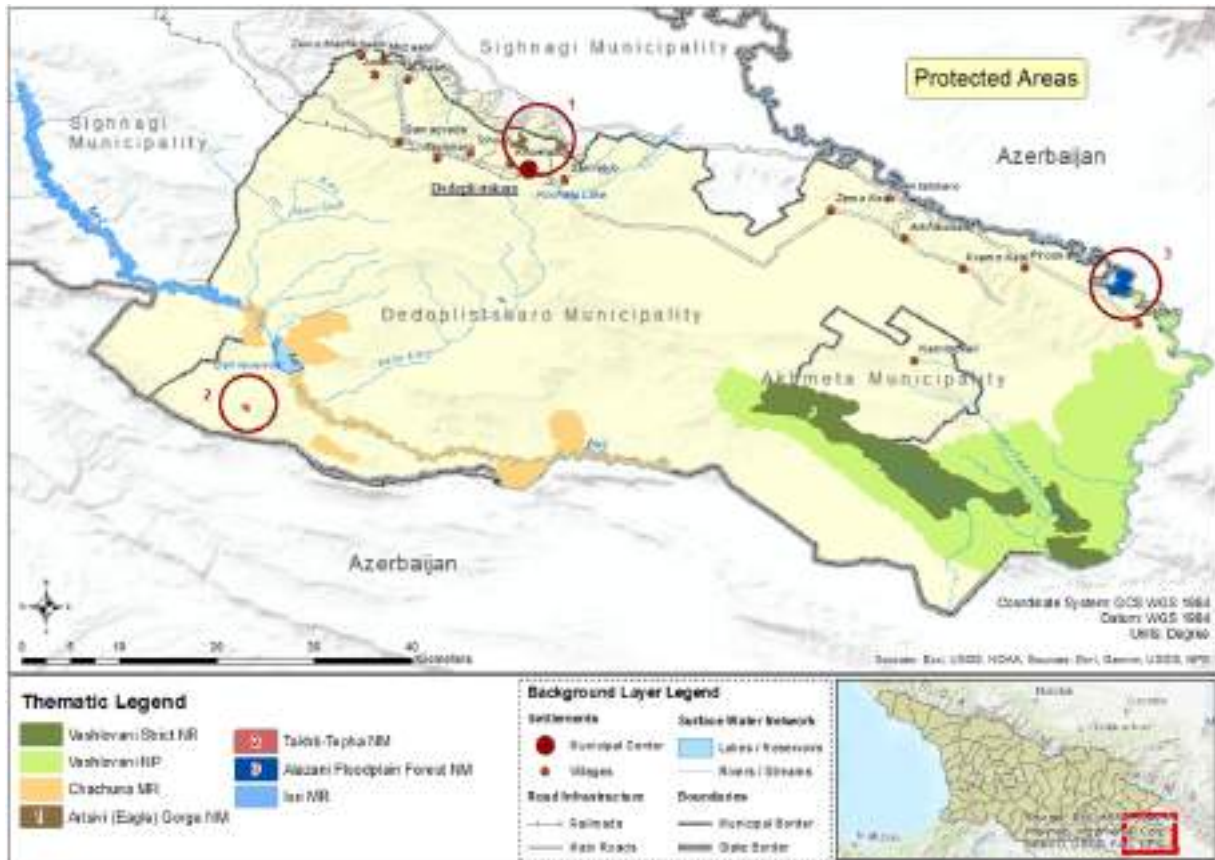


Figure 5: Protected Areas (Source: APA)

Vashlovani Protected areas are managed by the administration, which is the territorial unit of Agency of Protected Area (APA). Administration manages Vashlovani strict nature reserve, Vashlovani National Park and Takhti-Tepha, Artsivi (Eagle) Gorge, and Alazani Floodplain Forest Natural Monuments. Meantime, Chachuna managed reserve is managed by its own administration.

The Management Plan for Vashlovani protected areas was approved by the Government of Georgia on 2014 for a period of 6 year¹, and accordingly it is currently expired. Therefore, Vashlovani Protected Areas will be managed in accordance with the Temporary Regulation of Protected Areas until a new management plan is approved.

Chachuna Managed Reserve is managed in accordance with the “Temporary Regulation on the Operation of Chachuna Managed Reserve”, which is approved by the Government of Georgia by the resolution #84, in January 16, 2014.

The land use within protected areas generally regulated by the Law on the System of Protected Areas². According to the Law, natural resources within the territories of strict nature reserves, national parks, natural monuments, and managed reserves are the exclusive property of the state. It is prohibited to transfer the ownership to physical or legal persons. Although some exceptions are allowed within the traditional use zone of the national park and some parts of the managed reserve. Specifically, the law allows based on the agreement with the local authorities, to lease land for 10 years. The same law defines permitted forms of ownership, disposal, and use of natural resources in protected areas that are

¹ Government Resolution # 18 “on approval of the technical regulation – Vashlovani Protected Areas Management Plan”. 3 January 2014. <https://matsne.gov.ge/ka/document/view/2189659?publication=0>

² Law of Georgia “On the System of Protected Areas”. #136. Parliament of Georgia. 07.03.1996. <https://matsne.gov.ge/en/document/view/32968?publication=15>

determined in accordance with their categories and territorial-functional zones. Allowed activities in different categories and/or in different zones of protected areas are determined by the management plan or the temporary regulation rule.

In accordance with the Law on the System of Protected Areas, as well as with the Management Plan of Vashlovani Protected Areas, and the Temporary Regulation on the Operation of Chachuna Prevention, following activities are allowed within the specific zones of the protected area:

- All types of natural resources (including land resources) within the Vashlovani strict reserve are only state property. In the Vashlovani reserve and the strict protection zone of Vashlovani NP, the allowed activities are extremely restricted and are mainly limited to scientific research, educational activities, and monitoring.
- In the traditional use zone of the Vashlovani NP and the Chachuna Managed Reserve, the following activities are permitted: lease pastures and hayfields, sport fishing, use non-timber forest resources, use firewood and visitors' entrance. Visitors' movement is allowed within the visitor zone of NP, as well as the development of relevant infrastructure. Hunting is allowed in the hunting farm arranged in Chachuni Managed reserve, as well as in hunting farm arraigned in Iori Managed reserve (Sighnaghi municipality), which is also considered as part of proposed Biosphere reserve.
- Visitors' movement and development of relevant infrastructure also allowed within the territories of Natural Monuments.

Land-use within the protected areas

Vashlovani National Park includes 17,410 hectares of pasture, and the Chachuna Nature Reserve – 2,200 hectares of pasture. The entire territory of winter pastures is divided into parcels, or so-called - individual "pastures" (see Figure 6). The area of plots varies from several tens up to 500 hectares. In total, 45 farms are located on the pastures of the territory of Vashlovani NP, and 17 farms are located in the border areas of the National Park (Eldari/Samukhi stepe, Patara shiraki, Iori steppe). The area represents traditional winter pastures that are mainly used by Tush herders. Around 33,000 sheep units (all livestock expressed in sheep numbers) use these pastures each winter. In most cases grazing occurs from mid-November to mid-April. Within the protected area, in addition to dead wood (for firewood), livestock farmers have access to water holes (UNDP. NACRES, 2015).



Figure 6: Pastures within Vashlovani NP. Source: (UNDP. NACRES, 2015)

The border of VPA connects directly with Azerbaijan state territory in the east and south. To the north and east VPA is surrounded by the rest of Dedoplistskaro municipality within Kakheti region. The areas of Dedoplistskaro region outside VPA are scarcely populated. Pastures are dominating in the direct vicinity of VPA (along the south-eastern and northern border).

In 2019, the TJS (Transboundary Joint Secretariat) program, with the support of WWF Caucasus Program Office (WWF CauPO), conducted a study to determine the protective status of the Samukhi Valley. Samukhi (Eldari steppe) is a wide strip of low steppe lying between VPA (borders on the southwest side) and the border with Azerbaijan (see Figure 7). The area of the valley is 13,813.3 ha. Samukhi Valley is an important habitat and also important migration, hunting, feeding, and nesting area for fauna representatives, spread in Vashlovani PA. Moreover, Samukhi Valley is an important habitat for gazelle. The territory of the valley has vital importance for the restoration of the gazelles' population. The area offers an extensive area of suitable gazelle habitat, so is important as a potential dispersal site and therefore it was chosen as the first area, where gazelles were reintroduced.

The adjoining steppes of Samukhi are used as a winter farm by Tushetian shepherds. In winter, the area is grazed by large numbers of sheep and goats from Tusheti (Akhmeta municipality). Shepherds arrive in October and return to the mountains in late April-early May, depending on the conditions. The number of families and livestock using these winter pastures has increased since 1990-1991 when their former pastures on the northern side of the Caucasus range became inaccessible after the break-up of the Soviet Union. Currently, there are 30 farms in the area (TJS. WWF CauPO. 2019).

Based on the results of the study, the development of Samukhi multi-use territory was recommended¹.

¹ IUCV Category VI – Protected area with sustainable use of natural resources

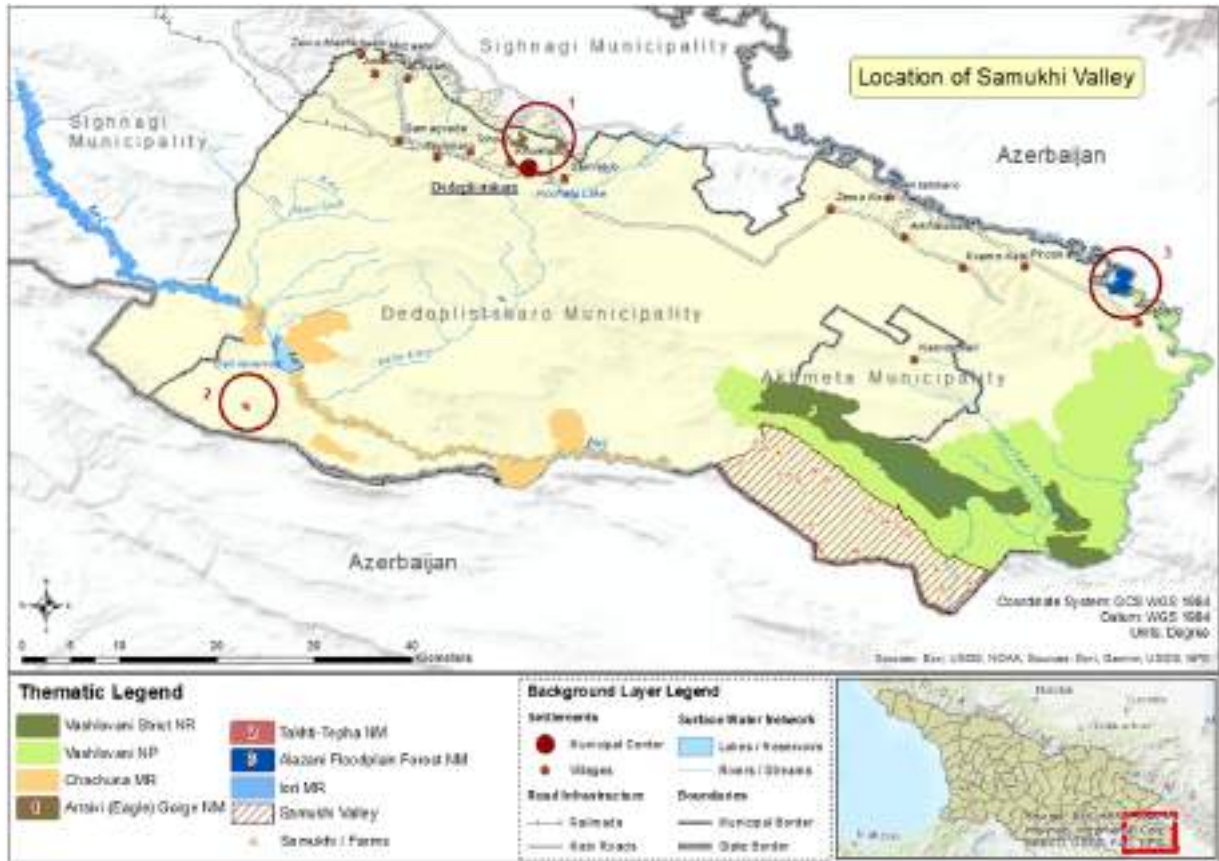


Figure 7: Samukhi planned protected area (TJS, WWF CauPO, 2019)

All pastures within the PAs of Vashlovani are under the ownership of Akhmeta municipality. Pastures adjacent territories of PA are partially private and partially owned again by Akhmeta municipality, though physically, they are within the boundaries of the Dedoplistskaro Municipality.

Tushetian shepherds

Sheep-farming is a major activity in Tusheti. It is seasonal and semi-nomadic and is closely connected to the socio-economic activities and lifestyle of the Tushetian community. In the end of May sheep are taken to summer pastures in Tusheti, whereas in autumn they are brought to VNP and adjacent winter pastures. It should be mentioned that shepherds are accompanied by family members, who remain on summer pastures until the middle of October and live in the Tushetian villages of Akhmeta district the rest of the year. So, it could be stated that Vashlovani National Park and the adjacent areas are traditionally used by the Tush community for grazing their sheep on the rangelands. The schematic presentation of the Tushetian shepherds' cycle is presented below, Figure 8.

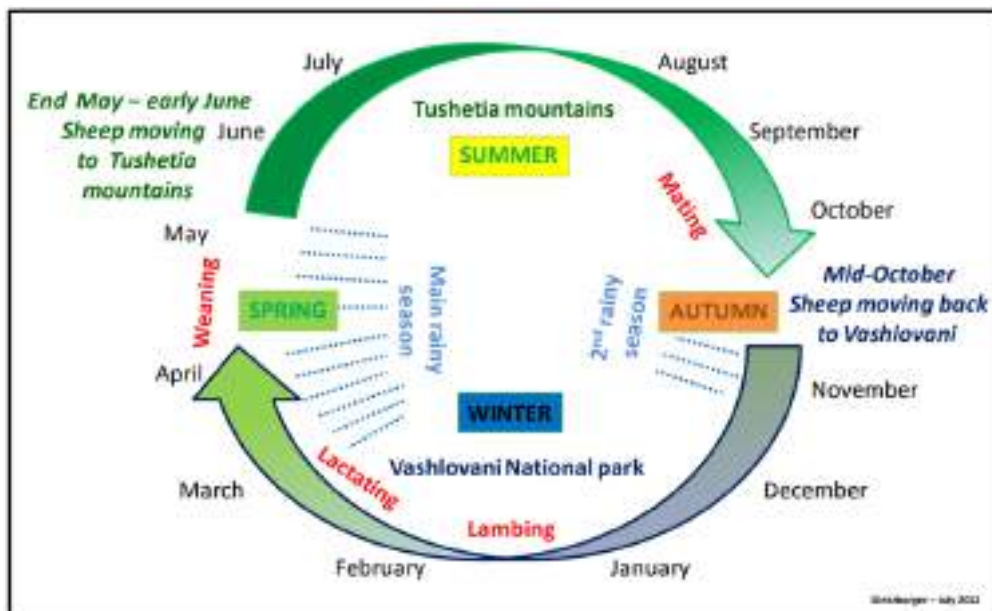


Figure 8: Schematic presentation of the rangeland use, Tush sheep flocks location and cycle (G. Gintzurger, 2012). Source: (NACRES, 2013)

Below, Figure 9 shows the main migration area of Tushetian shepherds.

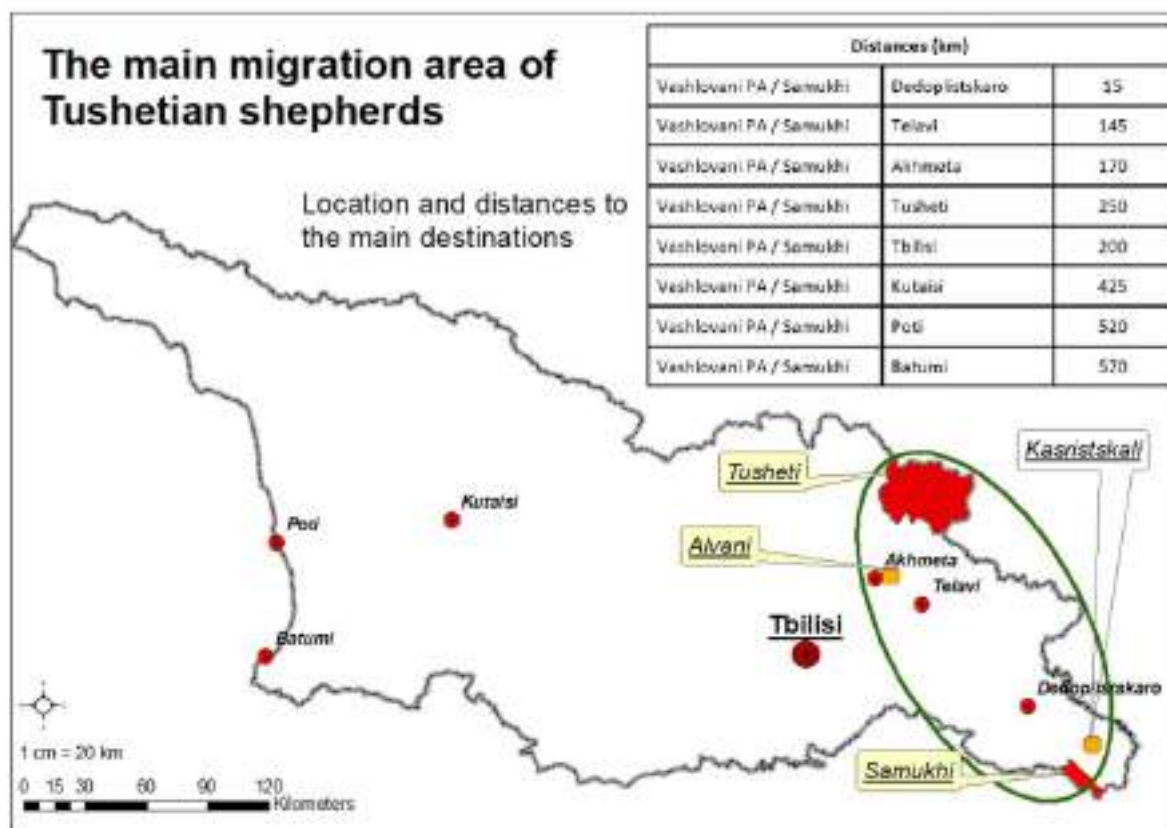


Figure 9: The main migration area (TJS. WWW CauPO, 2020)

2.2.2.2 Emerald network

The Emerald Network is a pan-European ecological network with the goal to preserve the biodiversity of Europe. Its establishment is one of the requirements of the Convention on the Conservation of European

Wildlife and Natural Habitats (Bern, 1979), also known as the Bern Convention. The Emerald Network is one of the main mechanisms for its implementation.

Throughout Europe, sites that are particularly rich in species and habitats protected by the Bern Convention are selected. These sites are referred to as Areas of Special Conservation Interest (ASCI), and they are intergraded into a unified ecological network - the Emerald Network.

Emerald sites are subject to a special and relatively flexible management regime, which is to ensure the long-term conservation of species and habitats protected under the Bern Convention (Nozadze, Artisvadze, & Shavgulidze, 2018).

Georgia became a Contracting Party to the Convention in 2009. The Bern Convention is built around the principle that the long-term survival of wild species is only possible by protecting their habitats. Subsequently, habitat conservation is its main focus. Besides being an obligation to be fulfilled under the Bern Convention, the development of the Emerald Network is stipulated by the EU-Georgia Association Agreement. Notably, the development of the Network is also part of the Biodiversity Strategy and Action Plan of Georgia (2014-2020).

Currently, 46 areas have been identified and included in the emerald network in Georgia, and 12 more areas are being surveyed for the further inclusion in the emerald network.

In the municipality of Dedoplistskaro, there are three sites, which are already included in the emerald network – Chachuna (GE0000003)¹, Artsivis Kheoba (GE000035)² and Vashlovani (GE0000007)³. Moreover, another site – Kotsakhura (GE0000051)⁴ is nominated as a candidate site for inclusion in the network.

Below, Table 4 and Figure 10 indicates the area and location of adopted and candidate emerald sites within Dedoplistskaro municipality.

Table 4: Emerald network sites – Dedoplistskaro municipality

Site	Status	Area (ha)
Tchachuna (GE0000003)	Emerald network site	5,431.00
Artsivis Kheoba (GE000035)	Emerald network site	100.40
Vashlovani (GE0000007)	Emerald network site	34,741.80
Kotsakhura (GE0000051)	Candidate site	38,446.90

¹ <https://natura2000.eea.europa.eu/Emerald/SDF.aspx?site=GE0000003&release=2>

² <https://natura2000.eea.europa.eu/Emerald/SDF.aspx?site=GE0000035&release=2>

³ <https://natura2000.eea.europa.eu/Emerald/SDF.aspx?site=GE0000007&release=2>

⁴ <https://natura2000.eea.europa.eu/Emerald/SDF.aspx?site=GE0000051&release=2>

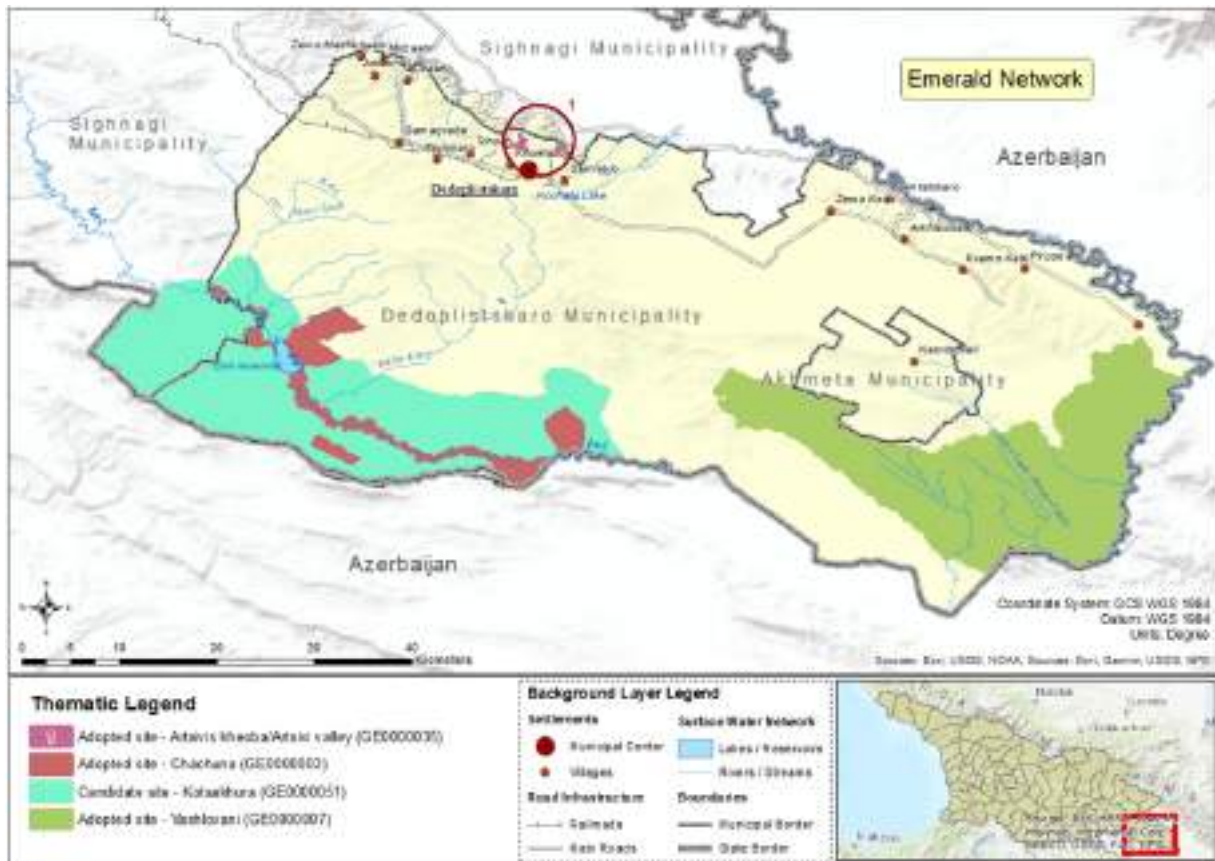


Figure 10: Emerald Network. Dedoplistskaro municipality. Source: APA

Current national legislation does not regulate management of emerald sites and consequently, the country is guided by the provisions of Bern convention and EU directives¹. The vast majority of emerald site areas in Dedoplistskaro municipality coincide with a protected area and accordingly the latter's administration is responsible for the site's management based on the protected area management plan or the temporary regulation rules. The management plan should include the goals and objectives of the Emerald site and subsequent activities (a separate management plan will not be necessary).

Until now, specific national law or regulations for the management of emerald sites outside of protected areas does not exist (e.g. there not defined managerial bodies for emerald sites as well as for the development of management plan and responsibilities for its implementation, etc.). So, in this situation the Ministry (MoEPA) requires only an appropriate assessment (AA) according habitat directive only for the projects that may have a negative impact on the species and habitats of specific emerald site.

It should be mentioned that the Bern Convention does not provide specific guidance as for which agency should manage Emerald sites. In practice, this is usually the agency or person who owns the territory. For instance, if an Emerald Network site coincides with a protected area, it will be managed by the Agency of Protected Areas. If the area overlaps with the National Forest, the manager will be the National Forestry Agency. In case when the territory is under municipal or private ownership, the site will be managed by the local government or a physical person, respectively.

2.2.2.3 Special Protection Areas (SPA) for birds

The association agreement between Georgia and the European Union (27 June 2014), considers obligations regarding the implementation of the following two EU directives relevant for the conservation of biological diversity: #) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora; and #) Council Directive 79/409/EEC of 2 April 1979 on the

¹ Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

conservation of wild birds. In accordance with the last one and to the association agreement, Georgia is obliged to establish a network of Special Protection Areas (SPA) and to initiate priority management measures within four years after signing of the association agreement.

In accordance with the above-mentioned obligation, 24 specific areas have been identified that are of particular importance for the protection of bird species and two of them are located within Dedoplistskaro municipality. See Figure 11.

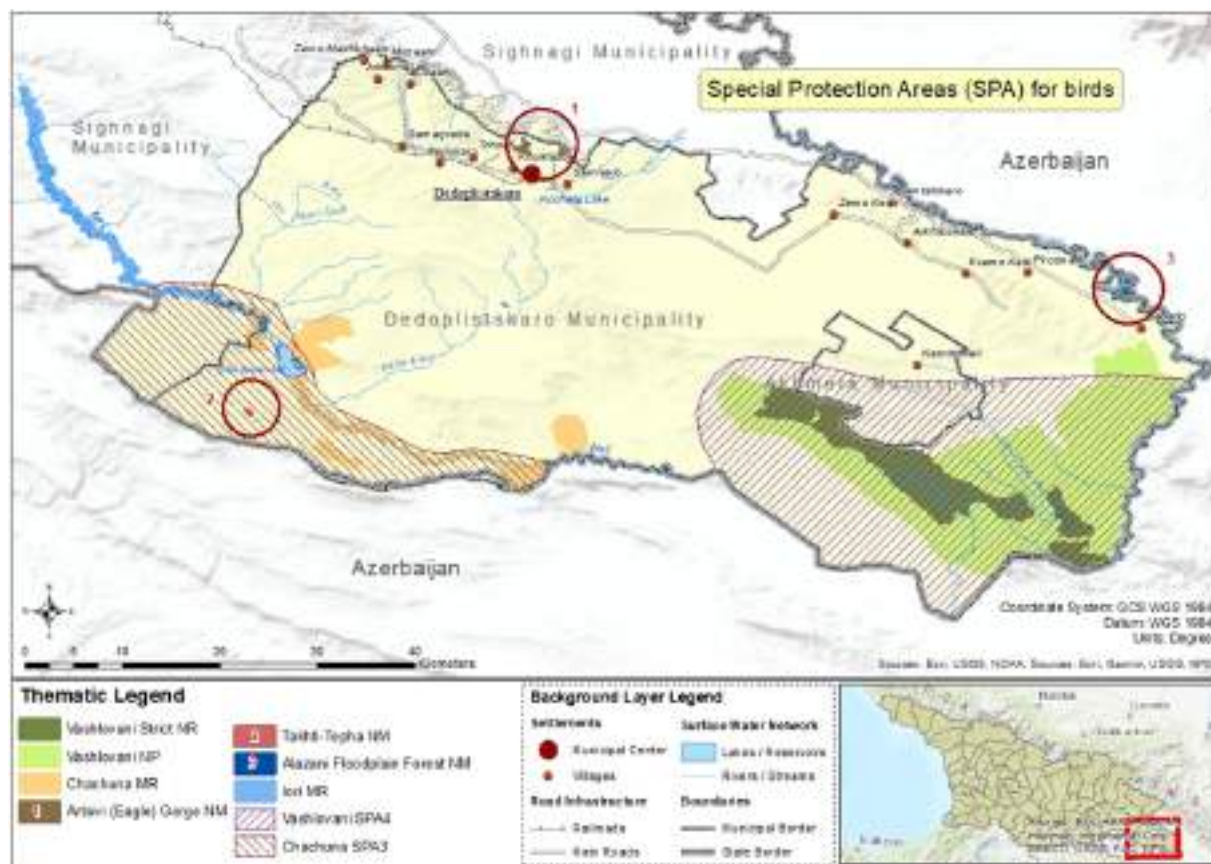


Figure 11: Special Protection Areas (SPA) for birds. Dedoplistskaro municipality. Source: Ilia State University

Current Georgian legislation does not regulate the management of specially protected areas for birds. Those parts of the territory located within the protected areas shall be managed by the Agency of Protected Areas in accordance with the management plan or the rules of temporary regulation.

Detailed information about SPAs within the target area is given below, Table 5.

Table 5: Special Protection Areas (SPA) for birds in Dedoplistskaro municipality. Source: Ilia State University¹

Name of the area	Area (ha)	Altitude (m)	Protection status
Chachuna (SPA 3)	27,794	250 – 500	11.68% of territory is covered by Chachuna Managed Reserve. 100% of territory is covered by IBA (GEO11). 11.66% IBA (GEO11) is represented by SPA 3.
Vashlovani (SPA 4)	64,176	100 – 600	51.71 % of territory is covered by Vashlovani Protected Areas. 100% of territory is covered by IBA (GEO11). 26.93% of IBA (GEO11) is represented by SPA 4

¹ <http://aves.biodiversity-georgia.net/>

2.2.2.4 Forest Fund

Dedoplistskaro municipality is one of the least forested places in Georgia, where state registered forests cover only 1% of the territory. For comparison, the national total is 43.2% (Local Development Strategy. Dedoplistskaro Municipality. Georgia, 2017).

Most of the forest is state property. A small section (204.4 ha) of Alazani flood plain (Kaklis Kure) is a natural monument and is included in Vashlovani PA. The forest management is carried out by the National Forestry Agency, a legal entity of public law under the MoEPA. In the Kakheti region the agency runs the regional Kakheti Forest Service, which includes all the municipalities of the region. In general, the agency manages the absolute majority of the country's forests. However, the law in action allows the existence of the local forests, which can be managed by the local government. Currently, Dedoplistskaro municipality does not manage/own any forest area.

The forest is used for fuel wood production for local villages.

Outside the protected areas, in Dedoplistskaro municipality, there are 11,862 hectares of state forest fund lands. The state forest fund, presented within Dedoplistskaro municipality is divided by following forestry (districts): Dedoplistskaro, Keda, Gediki, and Khirsa (see Figure 12). Dedoplistskaro and Khirsa areas (districts) partially located in Sighnaghi municipality. Areas of each district is given below, see Table 6.

Table 6: State forest fund. Dedoplistskaro municipality. Source: National Agency of Public Registry

Forest District	Area of the forest (ha ¹)
Dedoplistskaro	3,137.30
Gediki	3,139.40
Kedi	5,406.70
Khirsa	178.60
Total	11,862.00

These forest districts are only partially registered in the public register as a territory of the state forest fund. Completion of the registration process is required to get the final figures and to see the full picture.

¹ According to the data of National Agency of Public Registry

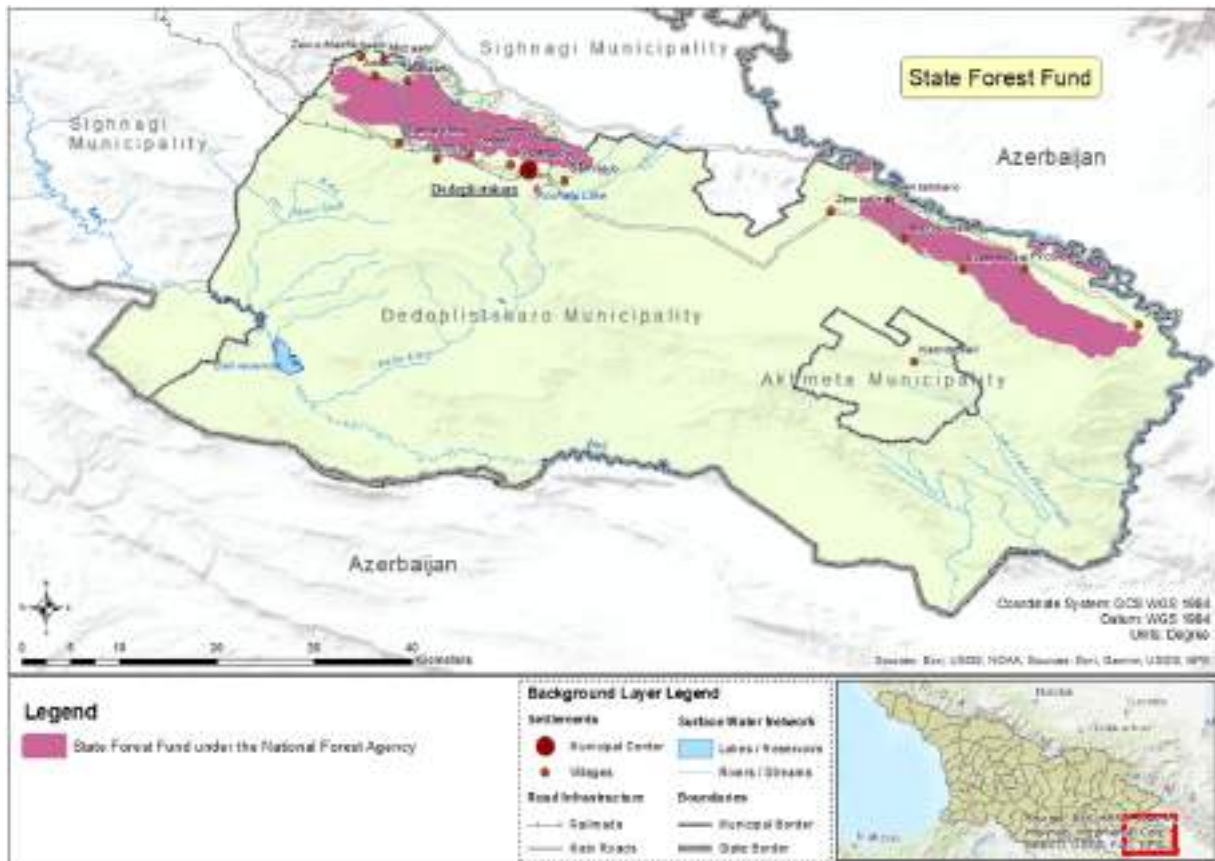


Figure 12: State forest fund under the National Forest Agency. Dedoplistskaro municipality

According to the National Forestry Agency, firewood allocation from these forests for social purposes in 2017-2019 was carried out only from the Kedi forest district. The total volume of allocated timber for the same years is 1,601.2 m³.

No special license for timber harvesting¹ has been issued on the territory of Dedoplistskaro municipality. This means that there is no commercial processing of the forest timber resources within the municipality.

2.2.2.5 Hunting farms

As was mentioned in the traditional use zone of Protected areas, as well as within the territories of Managed reserves one of the permitted activities is arrangement hunting farms. The law of Georgia on “Licenses and Permits” recognizes special license for hunting² as a part of a general license for forest use.

Within Dedoplistskaro municipality hunting farm is arranged within Chachuna Managed Reserve and its area is equal to 335 hectares. The hunting license has been issued to Ltd. “Monadire” (Hunter) in 2015 for a period of 20 years. The hunting farms have been established, mainly for shooting wild boars, hares, and birds. First hunting farms in this area were established more than 15 years ago and are now under one management. This farm has a management plan and the territory is divided up into zones such as hunting zone and breeding zone. The reserve has evidently played an important role in reversing the forest degradation process (which reached devastating levels 15-20 years ago). So far there has been very small-scale hunting in this reserve and for most of the wildlife it is apparently a refuge site (Hirschelmann, et al., 2016).

¹ Law of Georgia on Licenses and Permits (# 1775. 24.06.2005) defines special license for timber harvesting as a type of general license for forest use (article 7)

² Article 7 Types of licenses to use. 4. General license for forest use. B) special license for hunting sector. <https://matsne.gov.ge/en/document/view/26824?publication=62>

Besides the above mentioned, hunting farm arraigned in Iori Managed reserve (located in Sighnaghi municipality), which is also considered as part of the proposed Biosphere Reserve. The total area of this farm is 834 ha¹. Detailed information on these farms is given below, Table 7.

The future of the hunting farms remains uncertain until the situation regarding the new hunting laws has been clarified.

Table 7: Hunting farms. Source:(National Report on the State of the Environemnt of Gerogia 2014 - 2017, 2019)

Hunting Facility	Location	License issues date and period of validation	Area, ha
Monadire LTD	Iveri ² and Chachuna Managed Reserves	10.12.2015 – 27.12.2035	335
Iori Resources LTD	Iori Managed Reserve	11.03.2008 – for a term of 20 years	834

2.2.2.6 Orthodox Church

In 2007, 180 ha of the national park territory (Shavi Mta monastery and its surroundings) and 4 ha of Artsivis Kheoba (Eagle gorge) natural monument (a section at Khornabuji castle) were transferred to the Georgian Orthodox Church with a special agreement for a period of 20 years. Currently no management activities are implemented by the Church on these territories.

2.2.3 Natural Resources

2.2.3.1 Mineral resources extraction (mining) areas

In the process of working on this assessment information about licenses for extraction of mineral resources, issued within the Dedoplistskaro municipality was obtained from the National Agency of Mines (NAM). The data received from the agency shows that for Spring 2020, within Dedoplistskaro municipality 18 licenses for inert materials (limestone, sand, clay) have been issued, with a total area of 127.5 hectares. Detailed information about licenses issued within the Dedoplistskaro municipality is given in Annex I – Licenses for use of the natural resources.

In addition to the above mentioned, two types of mineral resource deposits (limestone and plaster) have been identified in Dedoplistskaro municipality. These deposits are not licensed as of today.

2.2.3.2 Groundwater

Five licenses for groundwater extraction have been issued on the territory of Dedoplistskaro Municipality (detailed information presented in Annex I). All of them are issued for technical use of extracted water. Besides, several underground freshwater deposits are presented which are not licensed as of today (see Figure 13).

¹ Management plan for hunting farm “Iori resources”. 2019.

² Most probably - Iori

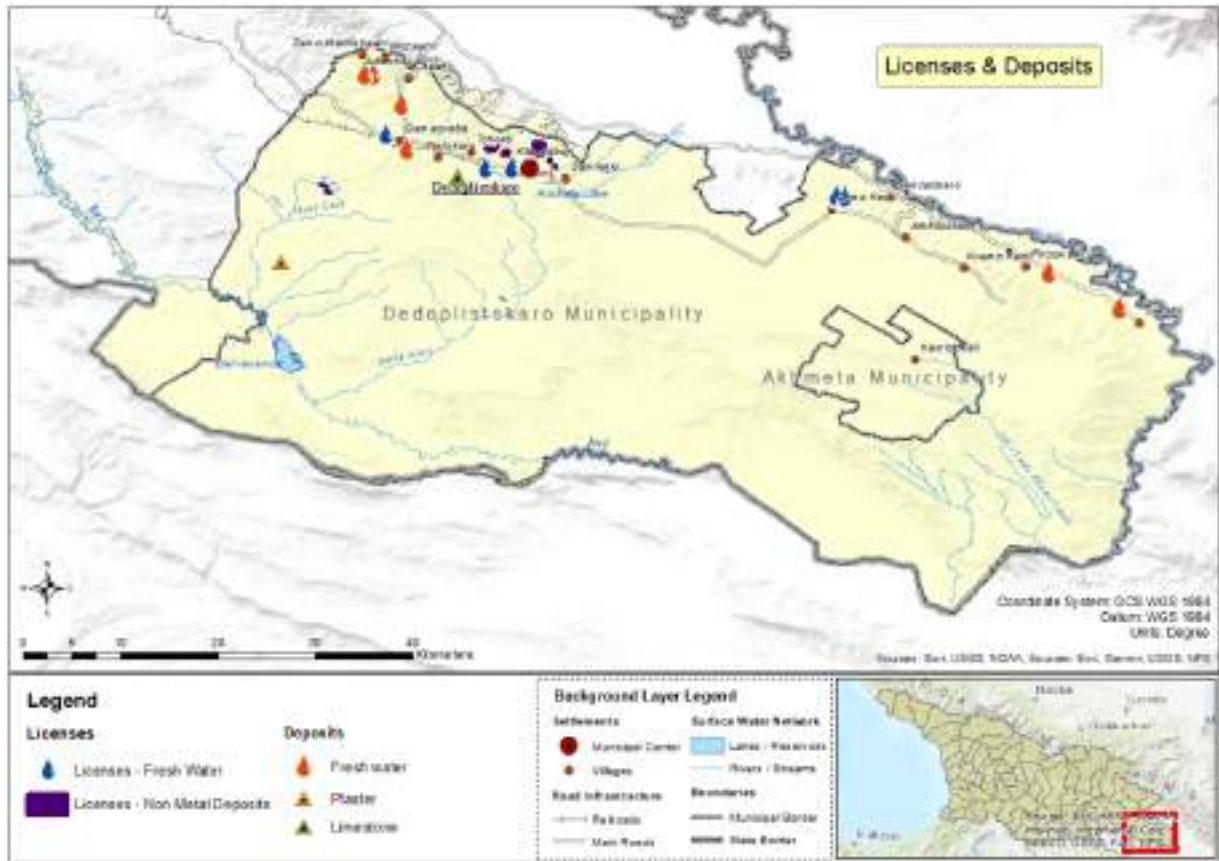


Figure 13: Licenses and Deposits. Dedoplistskaro municipality. Source: NAM

2.2.3.3 Oil and Gas

In terms of oil and gas, territory of Dedoplistskaro municipality is located on the XII license block (see Figure 14). The territory of the entire country is divided into license blocks, where different companies selected through international tenders extract oil. They have concluded production sharing agreements with the government. Georgian Oil and Gas Corporation (GOGC) as a national oil company cooperates with the companies, monitors their activities, and manages the state share of oil.

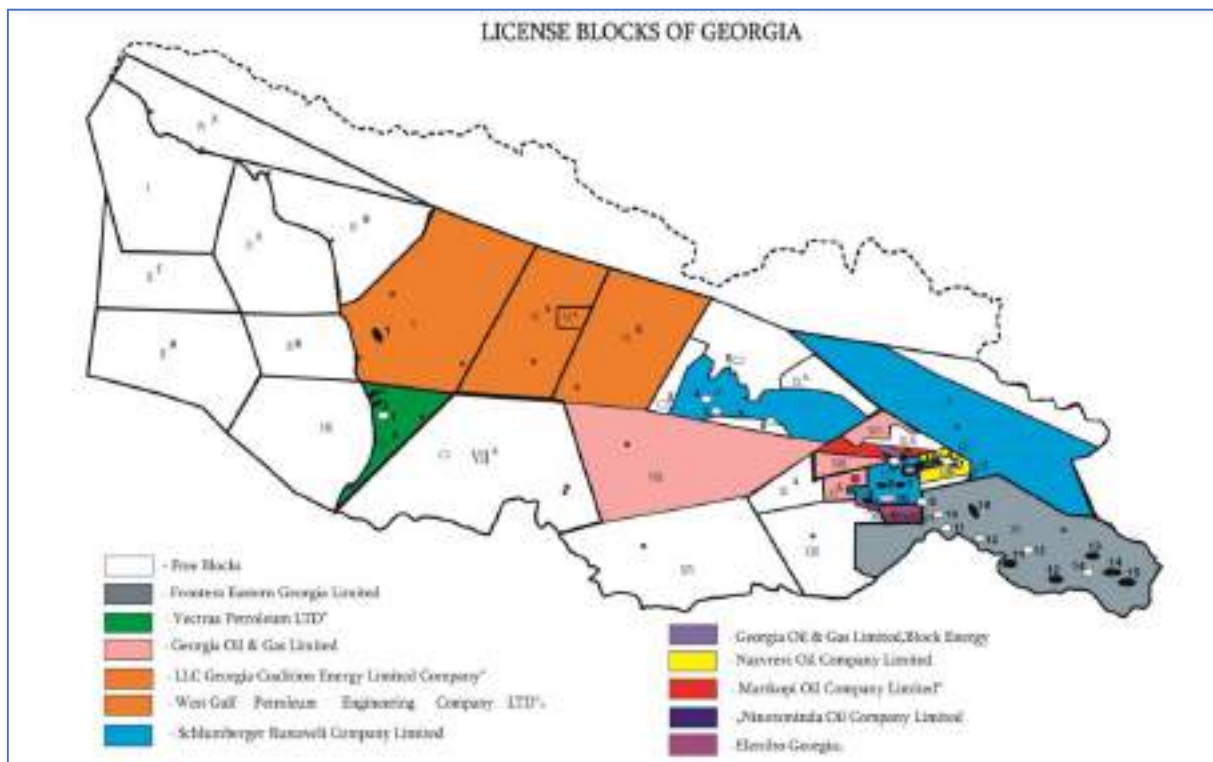


Figure 14: Location of the license blocks¹

On the XII License Block, a contract was signed between the State of Georgia and the company „Frontera Resources Georgia Corporation” and “Frontera US LLC” for a production sharing agreement and refinery study dated 25 June 1997. In 1997, a 25-year license was issued to the company to conduct oil and gas exploitation work. The website of the “Frontera Resources”, gives information about oil fields within the XII license block (see Table 8 and Figure 15).

Oil and gas operations in Dedoplistskaro municipality,

Table 8: Oil and gas operations. XII license block. Dedoplistskaro municipality. Source: “Frontera Resources Georgia Corporation²”

Oil field	Area	Number of wells
Taribana ³	approximately 80 km ² (potentially 800 km ²)	45
Mirzaani ⁴	100 km ²	297
Shallow fields ⁵		
- Patara shiraki		
- Nazarlebi		
- Mkraliskhevi		
- Oleskhevi		
- Mlashiskhevi		

¹ Source: <https://www.iene.eu/articlefiles/giorgi%20tishvili.pdf>

² Source: <https://fronteraresources.com/>

³ <https://fronteraresources.com/operations/georgia/taribani/>

⁴ <https://fronteraresources.com/operations/georgia/mirzaani/>

⁵ <https://fronteraresources.com/operations/georgia/shallow-fields/>

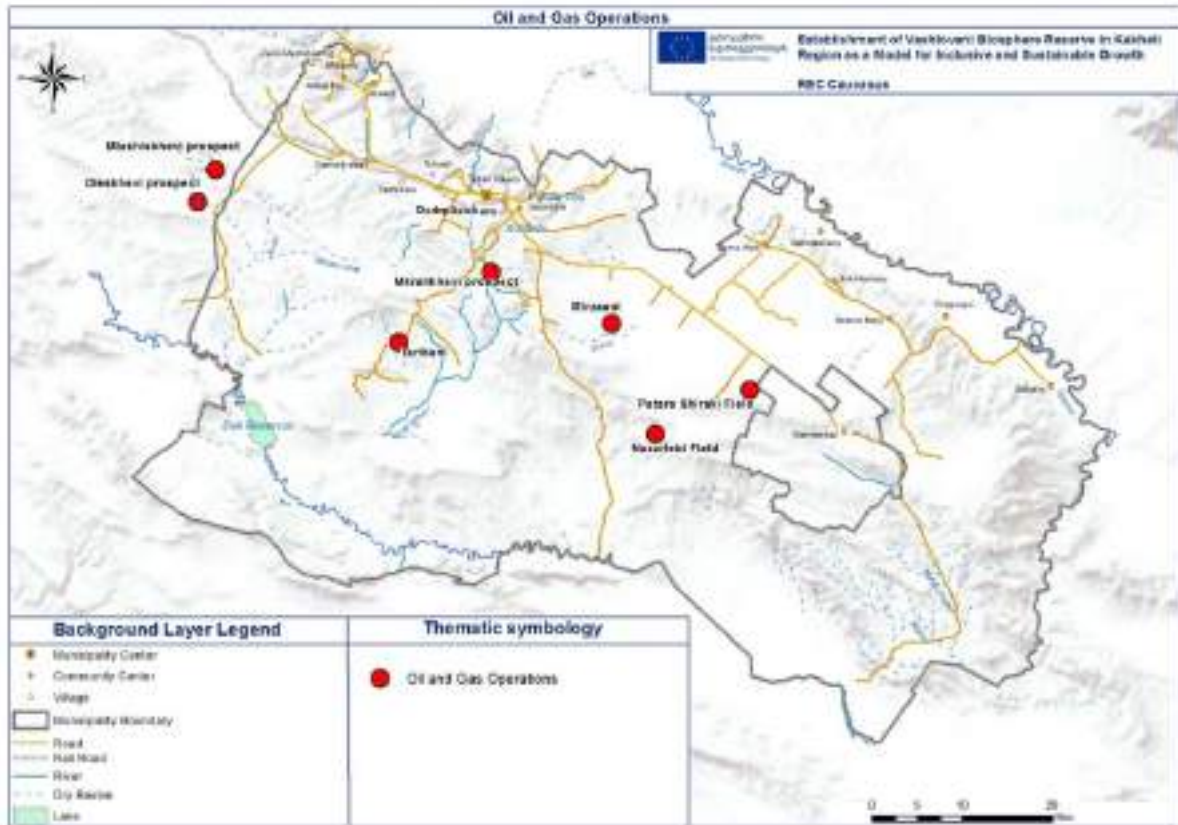


Figure 15: Oil and gas operations. XII license block. Dedoplistskaro municipality. Source: “Frontera Resources Georgia Corporation”

On January 15, 2018 GOGC and SAOG commenced arbitration proceedings against FRGC by filing a request for arbitration with the Hague Permanent Court of Arbitration with respect to a dispute arising out of a breach by FRGC of its obligations under the PSC. On April 17, 2020, the Arbitration Tribunal rendered its final award. It ruled unanimously that Frontera had committed a material breach of the PSC. Correspondingly, the contract between state and company has been canceled¹.

2.2.4 Urban and Recreation and resort areas

2.2.4.1 Settlements and infrastructure

There are 1 urban (Town Dedoplistskaro) and 15 rural settlements on the territory of Dedoplistskaro (see Table 14).

Roads

In terms of road infrastructure, it should be noted that the territory of the municipality is passed by the state importance roads. This type of roads is managed by the Road Department of Georgia. Table 9 shows information about these roads.

Table 9: Roads of state importance. Dedoplistskaro municipality. Source: Road Department of Georgia²

Index	Name	Length (km)
ø-39	Tsnori – Dedoplistskaro – Kvemo Kedi	74.20

¹ <https://www.gogc.ge/en/article/a-few-necessary-explanations-for-the-outcome-of-the-arbitration-dispute-with-frontera-/485>

² <http://www.georoad.ge/?lang=eng&act=pages&func=menu&pid=1386667041>

შ-171	Gumbati – Khirsa – Enamta – Samtatskaro - Sabatlo	67.30
შ-173	Arkhiloskalo – Samtatskaro – State border with Azerbaijan	6.00
შ-174	Khornabuji - Erisimedi	21.00

The roads of local importance (managed by local municipality) are connected to the listed roads within the territory of Dedoplistskaro municipality.

Total length of internal municipal roads (local importance) is 128 km. The road infrastructure of the Dedoplistskaro municipality is under-developed. Unlike internal village roads, which are in a very bad condition, regional and municipal roads are newly rehabilitated or being under rehabilitation. Street lighting is available only for the Dedoplistskaro town.

Although most of the local population is engaged in agriculture and the municipality is richest in the country in terms of agricultural land, farm access roads are not available. The same partially applies to the roads accessing places of tourist interest. Only the roads leading to Vashlovani Protected Area and the chapel on the Elia's mountain are renovated.

Railway

The passenger railway is not operating in the municipality, as in the entire Kakheti region. When it used to operate, it consisted of only one line: Tsnori -Dedoplistskaro - Kvemo Kedi.

Natural gas and electricity supply

The municipality is fully gasified except Gamarjveba, Ozaani and Arboshiki villages¹ (according to new information, currently, the municipality is fully gasified²). All the settlements of the municipality enjoy permanent electric power supply.

Internet connection, TV, fixed phone

One major national communication company provides cable internet connection/TV/fixed phone services to the town Dedoplistskaro and Gamarjveba village. In other villages, communication services are available only through national mobile communication service providers.

Water supply

The drinking water, in the urban areas, is provided by the United Water Supply Company of Georgia³, the 100% shares of which is owned by the government. The rural water supply is the responsibility of the local municipalities.

The population, as well as animals, use ground and fresh water artesian wells for drinking water supplies. The fresh water artesian wells have been drilled for supplying the population with drinking water. Currently 50 operational artesian wells are located at the territory of the municipality, which are drilled by the State for the local needs. This water is used also for local gardens and domestic animals. However, it is not enough for the irrigation of the agricultural plantations.

Waste and wastewater

The municipality lacks waste disposal facilities and the sewage system.

Irrigation

Two rivers are flowing through the territory of the municipality - Alazani and Iori. R. Alazani flows in the north-east of the municipalities along the following villages: Samtatskaro, Pirosmeni and Sabatlo representing the state border. R. Alazani tries to cut a linear bed on many sections (Village Sabatlo is one

¹ Local Development Strategy 2017.

² <http://www.economy.ge/?page=news&nw=1509&lang=en>

³ <http://water.gov.ge/>

of such places) in a way as it happened in Village Erisimedi in Signagi municipality. In such a case, hundreds (250-300) of hectares will be added to the non-irrigated territories.

R. Iori flows in south-east of the municipality and partly represents the state border. The Dali Reservoir is located on this river. (see chapter [2.2.5 Water bodies](#)).

Water from Alazani and Iori rivers has been traditionally used for the irrigation of surrounding areas, although these are very small territories. The territory of the municipality is bisected with the ravine beds and gullies of small, seasonal rivers (Leki Tskali, Mlashe Tskali, Pantrishara Tskali, Didi Ru, Qushi, Brotseula, Kumuro).

Dedoplistskaro municipality is one of the driest and arid area in Georgia. The climatic conditions of the vegetation period are characterized by particularly low precipitation (221 mm). At this time, the soil moisture index is below the allowed level, which significantly reduces the productivity and inflicts great material loss to the land users (UNDP Georgia, 2014).

To replenish the moisture deficit, 4 mechanical irrigation systems with mighty pumping stations and reservoirs were constructed and operated in the municipality from the second half of 1970s. The reservoirs were filled with water resources of Alazani and Iori rivers. More than 25% of their total area was irrigated in the district with these measures. 140 thousand ha of pastures were irrigated as well (supplying drinking water to farms). Currently, most part of these systems is inactive. The difficult economic transition period in Georgia in the recent past significantly damaged the irrigation systems in Dedoplistskaro district. Electricity transmission lines and expensive electromechanical devices were completely broken. Further exploitation of the complex irrigation systems has become impossible and to date, the majority of them are simply demolished.

The majority of the irrigation canals operating on the territory of the district were connected to R.Iori which had 3 water pump stations constructed by 1990s. Water pumped from Alazani River nurtured 2 irrigation systems used for lands located on the Shirak Plain. Below, Table 10 provides information about the reservoirs and irrigation systems operating at the territory of Dedoplistskaro during this period.

Table 10: Irrigation systems operating in Dedoplistskaro municipality to 1990. Source: (UNDP Georgia, 2014)

#	Name	Water Source	Irrigated area (ha)	Remarks
1	Taribana irrigation system	Iori	3,222	Water supplied from the pumping stations - Gamarjveba, Japaridze (currently Samreklo) located on R. Iroi
2.1	Zilicha I irrigation system	Alazani	5,221	Receives water from the pumping station installed at the floating ponton launched in Alazani River to second lifting pumping station, from where water is supplied to Sabatlo-Samtatskaro main canal.
2.2	Zilicha II irrigation system	Alazani	4,420	Receives water from the third lifting pumping station. The given system was written off by the Order of the Property Management Ministry issued on 10 December 2002 and does not operate.
3	Telatskali irrigation system	Iori	1,610	Received water from Machkhaani, Arboshiki pumping stations located at R. Iori. The given system was outdated and non-operational and was written off by the Order of the Property Management Ministry issued on 10 December 2002.
4	Kvemo Alazani irrigation system	Alazani	1,740	
Total			16,213	

Below, Table 11 shows information about reservoirs functioning in Dedoplistskaro municipality to 1990.

Table 11: Water Reservoirs functioning in Dedoplistskaro municipality to 1990. Source: (UNDP Georgia, 2014)

#	Reservoir	Filling type	Filling Source (river)	Volume, million, m3	
				Total	Useful

1	Dali	Riverine	Iori	180.00	140.00
2	Kushiskhevi	Tap	Iori	5.00	4.00
3	Kranchiskhevi	Tap	Iori	1.92	1.25
4	Telatskhali	Tap	Iori	1.60	1.30
5	Mtsaretskali	Tap	Iori	1.50	1.30
6	Vake	Tap	Iori	1.29	1.05
7	Zilicha	Tap	Alazani	4.50	4.00

These data demonstrate that mainly small-sized reservoirs were built at the territory of the district. The largest - Dali (Dali Mountain) reservoir was constructed in the 1980s and it had to supply the arid lands in the lower zone of Iori Plain water (approximately 1,600 ha) with irrigation. The irrigation system, which had to irrigate Iori Plain was not built. The operation of the majority of the irrigation systems existing at the territory of Dedoplistskaro district depends on the functioning of the water pumping stations, the operation of which requires a lot of electricity. They were plundered in the beginning of 1990s. In addition, the energy tariff increases, and permanent energy crisis led to the inactivity of these systems, due to which the large part of tap water reservoirs discussed in Table 11 is today non-functioning. Consequently, 6 tap reservoirs with a total useful volume of 12.9 million m³ have lost their function. The old irrigation systems of the municipality were plundered, they are destroyed and only a very small portion is used for watering (UNDP Georgia, 2014).

2.2.4.2 State Border Area and Borderland

The parameters of the border area and borderland are defined by the law of Georgia on the “State Border of Georgia”¹. According the law:

- **Border area** is an overland strip of a maximum of 5 kilometers in width, extending into the territory of Georgia from the Georgian State Border line where border control connected with the crossing of the border is carried out. In particular cases, taking into account the topography, a border area may be defined by an ordinance of the Government of Georgia in the overland section of the State Border of Georgia as 30 kilometers from the State Border line. A border area, as a rule, shall be established within the territory of a region, city, town, village, community, and settlement adjoining the State Border of Georgia, taking local features into account. A border area (where it is established) shall include part of the inland waters of Georgia. It is allowed to conduct economic, commercial and research activities in a border area. A person intending to carry out such an activity shall notify the authorised body operating within the system of the Ministry of Internal Affairs of Georgia. The notification shall specify the nature, technology and technical facilities of economic, commercial, and research activities, as well as the place, time and duration of carrying out works, the number of participants and the identity of the responsible person. The authorised body operating within the system of the Ministry of Internal Affairs of Georgia has the right to forbid a person from carrying out listed activities based on the conclusion of the competent executive authorities of Georgia.
- **Borderland** is a part of a border area of a maximum of 500 meters in width that directly adjoins the State Border. A borderland shall be established along the State Border of Georgia along the shores of the sea, river, lake, and reservoir and the banks of a river directly adjoining the border. The territory of a borderland is a state property. Within the borderland, historical and material cultural monuments and flora and fauna shall be protected by the authorised body operating within the system of the Ministry of Internal Affairs of Georgia, with direct participation of relevant state agencies. In a borderland, any activity, which is not associated with its

¹ #1526. 17.07.1998

maintenance, inspection of border signs and with State Border protection measures, shall be prohibited, except when otherwise provided by a treaty or international agreement of Georgia. In individual cases, the Prime Minister of Georgia shall have the right to allow certain kinds of economic activity in a borderland. The borderland regime shall not be applicable to populated localities. In population vacation destinations, the borderland regime shall be applicable only to the territory especially established by the authorised body operating within the system of the Ministry of Internal Affairs of Georgia

The Government of Georgia establishes a border area and a borderland based on the recommendation of the Ministry of Internal Affairs of Georgia.

Entry, temporary stay and movement of persons and vehicles in a border area and a borderland shall be carried out upon presentation of an identity document for a person and relevant documents for a vehicle that are determined by the legislation of Georgia. The place and time of entry, the route of movement of a person and a vehicle, as well as other conditions for their stay in a borderland shall be determined under the Procedures for the Regime and Protection of the State Border.

2.2.4.3 Recreation and resort areas

In Dedoplistskaro municipality there is one climatic resort - Arkhiloskalo (medical purpose - nephrological diseases) and one health resort place - Mlashe Lake. (Resolution # 428 of the Government of Georgia of July 3, 2014 on the approval of the list and status of Georgian resorts). However, their boundaries have not been officially established. See Table 12.

Table 12: Resorts. Dedoplistskaro municipality. Source: GoG Resolution #428. 3.07.2014

Resort	Type	Elevation above the see level (m)	Profile
Arkhiloskalo	Climatic	670	Nephrological
Mlashe tba (Salty lake)	Climatic	800	Preventive / Prophylactic

2.2.4.4 Cultural heritage sites

The area of assessment is located in the historical part of Georgia - Kiziki; The place has been known by the name since the 15th century, while in older sources it is referred to as Kambechovani (Strabo, the 1st century BC – the 1st century AD).

Based on the GIS Cultural Heritage Database 35 monuments of cultural heritage are identified in the Dedoplistskaro municipality. Among them is the VI century fortress of Khornabuji, the domed Church of Ascension (X century, village Ozaani), St. Elias Church, the Church of Saint Seraphoim of Sarov (Village Japaridze), Pirosmeni State Museum in village Mirzaani, exhibiting 14 original paintings of Niko Pirosmeni, etc. Besides heritage sites, without identified sites are also presented within the municipality. In total, national agency for Cultural Heritage Preservation of Georgia counts 118 cultural heritage sites within the municipality. Besides monuments, heritage sites without identified status are also presented within the municipality. In total, the national agency for Cultural Heritage Preservation of Georgia counts 118 cultural heritage sites within the municipality (see Figure 16).

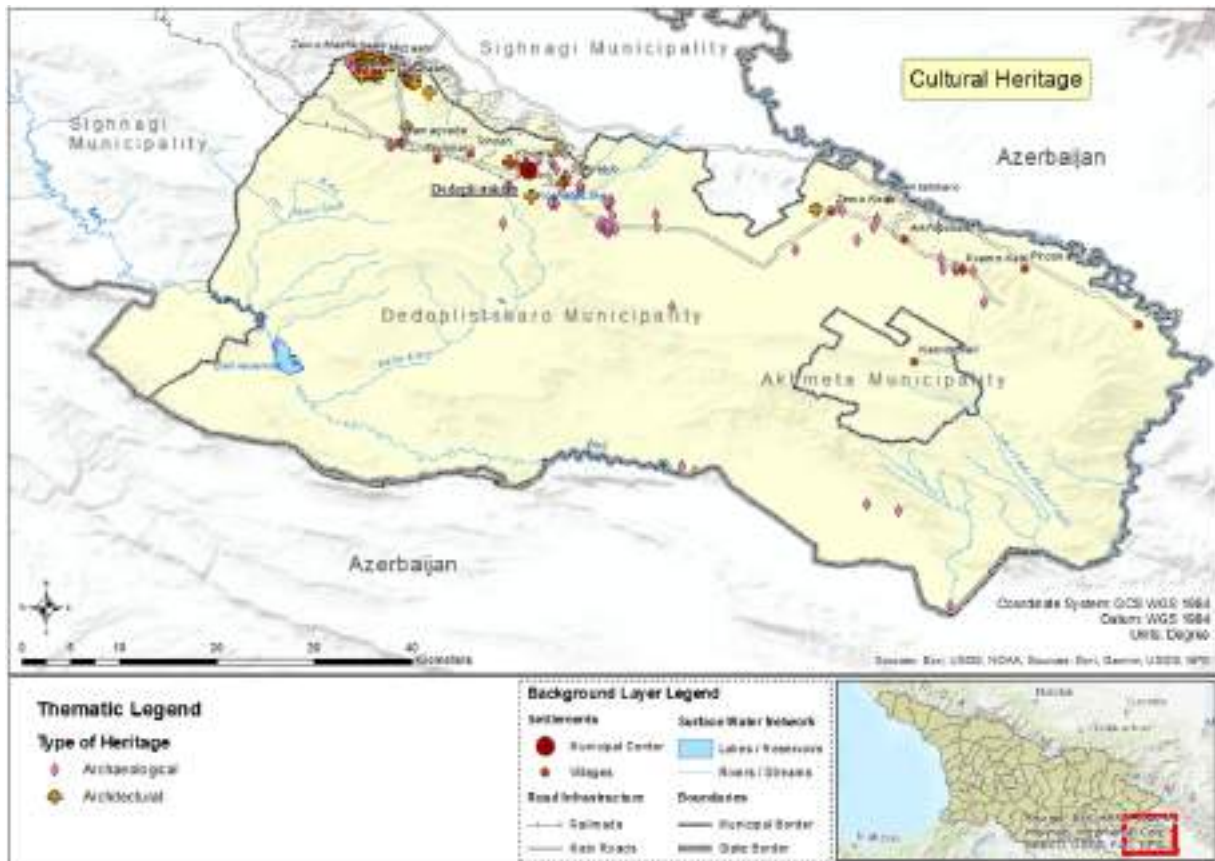


Figure 16: Cultural heritage objects. Dedoplistskaro municipality. Source: National Agency for Cultural Heritage Preservation, Georgia

Detailed list of cultural heritage objects is given in annex II.

2.2.5 Water bodies

The water resource management is carried out by the department environment and climate change of the MoEPA (water division of the department).

Natural lakes and artificial reservoirs

In the conditions of warm and dry climate, the surface of the municipality territory generally lacks permanent rivers. The hydrology network is developed only at some places and mostly it is represented with a network of dry ravines and gorges. The small rivers can be found in this area that exists only for a short period of time, which in most cases does not reach the river Iori or the river Alazani. Surface of the local land is crossed by the following rivers, Velijvari, Lekistskali, Uzundaraskhevi, Kushiskhevi, Ghoristkliskhevi, Kumeriskhevi, Pantishariskhevi and other small rivers.

These rivers are mostly fed by the rainwaters, sometimes by ground waters. The river Iori runs only along the southern border of the municipality for about 35 km, and there is the river Alazani flowing along the northeast border for about 85 km. The rivers Iori and Alazani are transit rivers in these border areas.

There are several lakes in the territory of Dedoplistskaro Municipality, two of which should be mentioned: Lake Kochebi and Lake Patara (a small lake).

- **Lake Kochebi** is located between Siraki plateau and Iori plateau at 775 m above the sea level. The surface area is 33 hectares (area of watershed is 1.3 km²). The average depth of the lake is 2.8m (maximum depth is 3.2m). The lake is endorheic and water is brackish.

- **Patara lake** is situated north-east direction to Kochebi lake, at a 618m above the sea level. The lake characterized by the very curved shores. The surface area is 15 hectares.

Dali Mountain Reservoir is a one of the biggest reservoirs on Iori river (after Iori reservoir), which was constructed for irrigation purposes in 80s of the last century. The location of the reservoir is about 15 km distance from Azerbaijan border. The reservoir built with 34 m height and 1,150 m width earth-mound dam. Its overall project capacity is 180 million m³ and among them usable part is 140 million m³. Surface area of the reservoir is 568 ha. Dali mountain reservoir currently is not operating as the irrigation system had to be built with joint funds from Georgia and Azerbaijan. After the collapse of Soviet Union, Azerbaijan refused to participate in the co-financing and Georgia did not have the necessary funds to cover it by itself. Nowadays the reservoir only has dead volume capacity of 40 million cubic meters (CENN. Mercy Corps, 2013).

For today the dam is also damaged and therefore refill does not take place and just so-called dead volume level is kept (dead volume level, the same as the horizon level is at 284,2 m altitude from sea level). (Tsitelashvili, Guliashvili, & Bitsadze, 2020)



Figure 17: Dali Reservoir. Source: (Tsitelashvili, Guliashvili, & Bitsadze, 2020)

2.3 Gender aspects of resource management

In general, there is little data on gender aspects in regard to natural resource management, land use or conservation in the target area. Especially on the level of local municipalities this topic is not discussed much. Gender aspects are not taken into account sufficiently. There are also no specific events or programmes to promote vulnerable or underprivileged groups in this regard. In regard to land use, most available data does not differentiate according to gender. The exception is transhumant sheep farming, of which we know that there is a strong differentiation between men and women in the families and communities and women do not actively participate in sheep herding and migration. Especially on the winter pastures women do not accompany herders and livestock owners but are responsible for the

housekeeping of the winter houses and take over management responsibilities while their husbands are away. For other land use activities, women are more actively involved, e.g. in cow-keeping. Women are running the guesthouses with technical support by men while those are focusing on tourist guidance and transport.

Handicraft is a traditional activity of women creating also an income. Gardening and crop production are done by both women and men. However, it can be said that in general the women only represents the farm or business leader if there is no man in the family. (Hirschelmann, et al., 2016).

Section 3. Human Population

3.1 Demography

Total number of populations within the proposed biosphere reserve is 21,435¹ (including village Kasristskali which belongs to Akhmeta municipality). In terms of spatial distribution within the Dedoplistskaro municipality - the populated area occupies a Northern stretch of the municipality, while the vast dry Central and Southern plains are without permanent populations and mainly home to the picturesque meadows, semi-deserts, and steppes (see Figure 18).

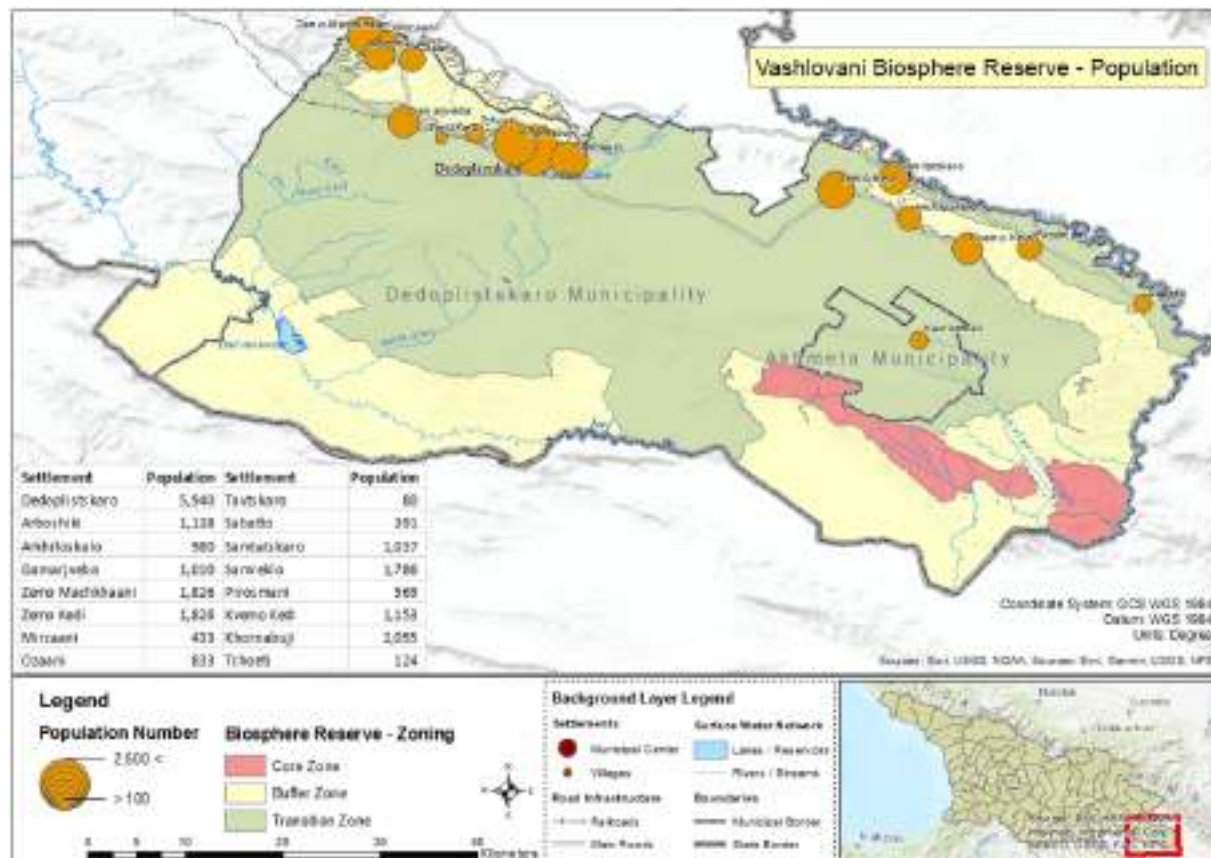


Figure 18: Dedoplistskaro municipality - Population

The population according to the different zones of the proposed biosphere reserve is given in below, Table 13.

Table 13: N of Population according different zones of proposed biosphere reserve

Zones	Permanently	Seasonally
Core Zone(s)	0	0
Buffer Zone(s)	0	250-350 migrant seasonal farmers
Transition Zone(s)	21,435	0
Total:	21,435	

- **Core Zone** – no permanent population

¹ Geostat (2014 census).

- **Buffer Zone** – Migrant shepherds. Number of shepherds calculated based on information about farms within the traditional use zone of Vashlovani NP and Samukhi area (average of 4-5 shepherds per farm)¹.
- **Transition Zone** - Permanent settlements of Dedoplistskaro and Akhmeta (village kasristskali) municipalities.

As it was mentioned population of the Dedoplistskaro municipality is about 21.5 thousand and is slowly declining due to emigration, aging and low fertility. Since 2004 (the year of the previous population census), over 11,000 people left the municipality mainly with the purpose to receive education or get a job (in/out of country). The decreasing trend is on par with the overall population movement pattern of the Kakheti region. large part of employable workforce migrates to other cities of Georgia or abroad. In Kakheti, as well as in the rest of Georgia, there is a trend of female emigration which has a very negative impact on the demography of the population. The migration rate is a very high, especially among the young population (due to the lack of perspective). For now, population aged between 20 and 39 make up only 17% of the total population of the region.

A considerable part of the population hails from other parts of Georgia (primarily Tusheti, i.e. Akhmeta municipality). Curiously, one of the remote villages (Kasristskali village) of the Dedoplistskaro municipality administratively belongs to another municipality of the Kakheti region (Akhmeta municipality) because of transhumance routes that connect Caucasian alpine summer pastures (Akhmeta) with winter Shiraki steppe pastures (Dedoplistskaro). Kasristskali village comprises Georgians from Tusheti.

In terms of level of urbanization, about one-third of the population or almost 6,000 people, live in the Dedoplistskaro town. The rest is distributed among 13 communities. Nearly all of these communities are situated along the meandering Northern verge of the municipality, where it is bordered by the Signaghi Municipality and, further East, by the Azerbaijan Republic. Only the Mirzaani village sits somewhat away, on the Iori Plateau. The vast dry Central and Southern plains and Easternmost and Southern border river gorges are devoid of permanent population. So at the end, all these settlements are located in the transition zone of the proposed biosphere reserve.

Below, Table 14 shows list of settlements within the Dedoplistskaro municipality.

Table 14: Settlements. Dedoplistskaro municipality

Municipality	Community	Villages
Dedoplistskaro	Dedoplistskaro – Town	
	Arboshiki	Arboshiki
	Arkhiloskalo	Arkhiloskalo
	Gamarjveba	Gamarjveba
	Zemo Machkhaani	Zemo Machkhaani
	Zemo Kedi	Zemo Kedi
	Mirzaani	Mirzaani
	Ozaani	Ozaani Tavtskaro
	Sabatlo	Sabatlo
	Samtatskaro	Samtatskaro
	Samreklo	Samreklo

¹ Source: (Hirschelmann, et al., 2016) and (Moistrapishvili, Kavtarashvili, Gogotidze, Kochiashvili, & Kobulia, 2019)

	Pirosmani	Pirosmani
	Kvemo Kedi	Kvemo Kedi
	Khornabuji	Khornabuji Tchoeti
Akhmeta	Kasristskali	Kasristskali

3.2 Sex-Age Structure

Women make up 52% of the total population, this also corresponds to national and regional indicators. It means that emigration processes drain local work-aged female and male human resources equally.

According to the age categories, the Municipality population has the following distribution: share of the population under the year 0-17 is 20.64%; year 18-64 – 58.29%; over 65 – 21.06%. The given age pattern is more or less similar to many other municipalities in Kakheti and other regions. Ongoing aging of the population in the country is faster in the countryside due to the constant emigration of youth and middle-aged people to Tbilisi and abroad. Detailed age-sex structure of the population is given below, Figure 19.

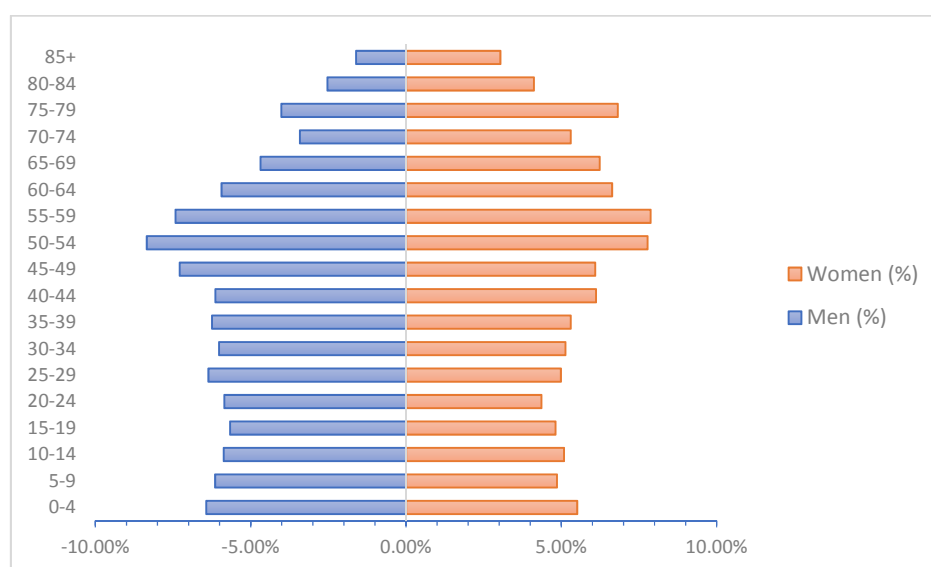


Figure 19: Age-Sex structure of the population. Dedoplistskaro Municipality¹

3.3 Ethnic and religion structure

Majority of the Municipality population are Georgians; the remaining population consists of the following ethnic minorities: Armenians, Azerbaijani, Russians and Greeks. In total national minorities constitute less than 9% of whole population (see Table 15).

Ethnic minorities are distributed more or less equally and constitute a majority only in two villages: the Sabatlo village located at the Alazani river in the Easternmost part of the municipality, bordering Azerbaijan (Armenian majority) and Choeti village located at the entrance of Dedoplistskaro town (Azerbaijani majority).

Table 15: Ethnic Structure. Dedoplistskaro Municipality. Source: GeoStat (Census 2014).

Ethnic group	Number	Share
Georgian	19,422	91.57%

¹ Source: Based on data provided by GeoStat

Azeri	288	1.36%
Armenian	915	4.31%
Russian	379	1.79%
Ossetian	37	0.17%
Greek	69	0.33%
Other	101	0.48%

According to religion affiliation, major part of Dedoplistskaro Municipality is Christian Orthodox; the rest of the population is Armenian Gregorian and Muslim.

3.4 Migrations

Based on data provided by GeoStat a total of 8,853 migrants were registered in the municipality (2014 census). Majority of these migrants are from Adjara region. The fact that Dedoplistskaro municipality host more than 1,500¹ eco-migrants from Adjara, the Western, seaside region of Georgia, who were relocated here in the 1980-s due to natural hazards occurred in their villages.

Information about internal migrants is given below, Table 16.

Table 16: Number of internal migrants in Dedoplistskaro municipality according to urban-rural settlements and previous permanent residence. Source: GeoStat (2014 census).

	Current permanent residence			
	Total	Urban areas	Rural areas	Share in total migrants (%)
Total internal migrants	8,853	2,516	6,337	100%
Previous permanent residence (regions)				
Autonomous Republic of Abkhazia ²	27	8	19	0.30%
Autonomous Republic of Adjara	716	13	703	8.09%
Tbilisi	2,977	1,138	1,839	33.63%
Imereti	108	28	80	1.22%
Guria	49	4	45	0.55%
Samegrelo-Zemo Svaneti	41	13	28	0.46%
Racha-Lechkhumi and Kvemo Svaneti	55	12	43	0.62%
Samtskhe-Javakheti	148	40	108	1.67%
Kvemo Kartli	476	132	344	5.38%
Shida Kartli	230	49	181	2.60%
Mtskheta-Mtianeti	597	102	495	6.74%
Kakheti	3,418	977	2,441	38.61%
Tskhinvali Region ³	11	0	11	0.12%

The Table 17 below, provides information about external migration from Dedoplistskaro municipality.

¹ This figure is indicated in the Local Development Strategy of Dedoplistskaro municipality (Local Development Strategy. Dedoplistskaro Municipality. Georgia, 2017). P. 6.

² Occupied territory

³ Occupied territory. Former South Ossetian Autonomous Oblast

Table 17: Number of emigrants from Dedoplistskaro municipality by urban-rural settlements and current country of residence. Source: GeoStat (2014 census).

	Previous permanent residence, before emigration from Georgia			
	Total	Urban areas	Rural areas	Share in total migrants (%)
Total internal emigrants	296	86	210	100%
Current country of permanent residence				
Russia	37	21	16	12.50%
Greece	82	10	72	27.70%
Turkey	34	17	17	11.49%
Italy	2-	5	15	6.76%
Germany	17	3	14	5.74%
USA	12	... ¹	...	4.05%
Spain	21	6	15	7.09%
France	11	3.72%
Ukraine	5	1.69%
Azerbaijan	5	1.69%
Other	52	16	36	17.57%

The table shows that Greece is one of the main directions of external migration.

It should be noted that the tables above show just only official data and the real picture is significantly higher than the figures given in these tables.

3.5 Health Care and Education

In the town of Dedoplistskaro there is one hospital and one polyclinic. Almost in every village, with exception of Mirzaani and Khornabuji, has an outpatient clinic (see Table 18).

Dedoplistskaro Municipality has free emergency medical service.

Table 18: Healthcare facilities. Territory of Dedoplistskaro municipality²

Settlement	Healthcare facility				
	Polyclinic / Hospital	Specialized clinic	Ambulant Clinic	N of Doctors	N of Nurse
Town Dedoplistskaro	1	4 (3 Dental clinic)	1	34	26
Arkhiloskalo			1	1	1
Samtatskaro			1	1	1
Sabatlo			1	1	1
Samreklo			1	1	1
Kvemo Kedi			1	1	1
Zemo Kedi			1	1	1

¹ the number of cases does not exceed 10

² Source: Information portal of Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia.

Gamarjveba			1	1	1
Zemo Machkhaani			1	2	2
Arboshiki			1	1	1
Pirosmani			1	1	1
Ozaani			1	1	1
Kasristskali (Akhmenta Municipality)			1	1	
Total	1	4	13	47	38

In Dedoplistskaro municipality in total there are 17 schools (see detailed information Table 19) and 17 kindergartens¹, with about 930 children.

Table 19: Schools. Territory of Dedoplistskaro municipality².

Settlement	N of Schools	N of Students	N of teachers	Status (public or private)
Town Dedoplistskaro	3	846	90	2 public and 1 Private
Arkhiloskalo	1	121	20	Public
Samtatskaro	1	110	17	Public
Sabatlo	1	60	25	Public (Georgian and Armenian Sectors)
Samreklo	1	149	27	Public
Kvemo Kedi	1	102	23	Public
Zemo Kedi	2	211	40	Public
Gamarjveba	1	98	23	Public
Zemo Machkhaani	1	192	30	Public
Arboshiki	1	108	19	Public
Pirosmani	1	76	15	Public
Ozaani	1	80	20	Public
Khornabuji	1	260	37	Public (Georgian and Russian Sectors)
Kasristskali (Akhmenta Municipality)	1	64	10	Public
Total	17	2,477	396	1 private and 16 public

¹ Source: website of Dedoplistskaro municipality.

² Source: <http://catalog.edu.ge/index.php>

Section 4. Potential for sustainable development

4.1 Local Economic Analysis

Dedoplistskaro municipality, despite being less than 10% of the population of Kakheti, contributes significantly to the economic performance of the region, particularly in agricultural production.

In addition to agriculture, its local economy is represented by tourism, mining and processing industry (limestone), various services, trade and construction.

Taxes on land and property have a large share in the local budget, which is explained by the municipality's enormous land resources, making the municipality the first in the country in terms of per capita agricultural land in the country. The analyses of the structure of 2016 year budget (totally 5.915 mln. GEL) shows that mainly budget was formed of land and property taxes (3.750 mln. GEL or 63%), as well as the state subsidy (0.8 mln. GEL or 13.5%), local fines and incomes from municipal services (together 0.145 mln. GEL or 2.5%). Only the rest – 21% - was a direct contribution from business activities in the form of income taxes and natural resources utilization fees. This budget structure is closely echoed by the economic structure of the Dedoplistskaro municipality, where commerce and production account for about 20% share¹.

The described budget structure reflects the economic structure of Dedoplistskaro municipality, where the largest part of the local value chain (the value created within the municipality, or about 20%-21% of contribution in local budget), 57% of enterprises is extractive industry (limestone), and trade and production account for 21% (Trade-Services Sectors: Auto Services, Hotels, Catering & Other Household Services). The municipality's value added products are also contributed by agriculture (14%), trade (10%), services (8%) and construction (5%). The remaining 6% comes on healthcare, education, etc. See Figure 20.

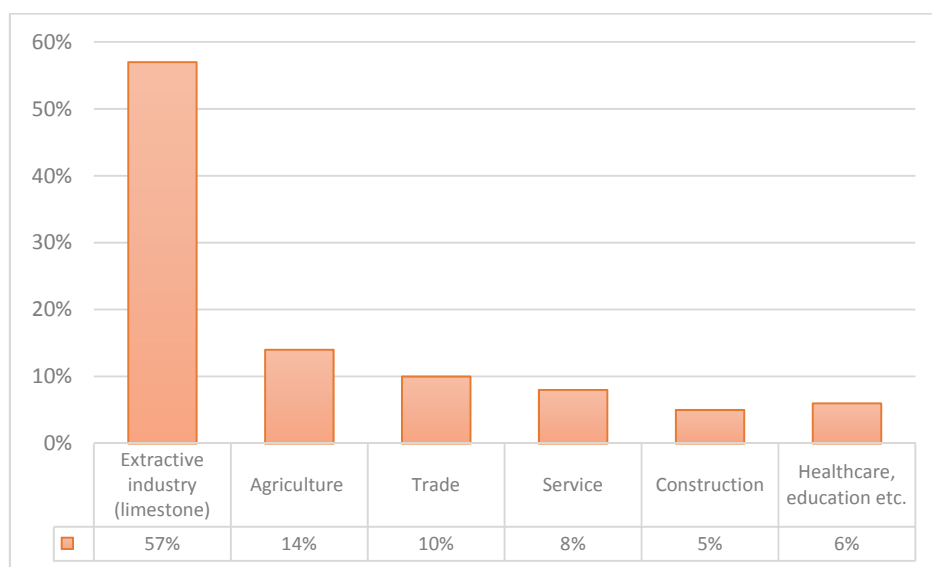


Figure 20: Economic structure. Dedoplistskaro municipality. Source: (Plan of Local Economic Development. Dedoplistskaro Municipality. Georgia, 2019)

These sectors mainly use local suppliers and resources to develop their value chains. As of today, any company, or any particular branch, whose products or services reflect the individuality of the area and distinguish it from others currently does not exist in the municipality.

As of 2017-2019, there have been 55 construction permits issued on investments implemented on the municipality territory, most of which are in the field of agriculture (grain warehouses, sheds, etc.), 24

¹ Source: (Local Development Strategy. Dedoplistskaro Municipality. Georgia, 2017)

objects in total, and 26 objects - on the building and reconstruction of trade facilities. It is worth noting the construction and reconstruction of catering facilities, hotels, small cellars, with 5 permits issued.

Compared to previous years the number of registered enterprises is increased, which is determined by the business and agriculture development programs in the municipality in recent years, also by the EU-funded projects, which contribute to the growth of a number of various types of enterprises and business development. At present, totally there are 430 active legal persons (both entrepreneurial and non-entrepreneurial (non-commercial¹)), registered in the municipality². Among them 18 are large enterprises, 72 medium and 90 small (detailed list of active “Legal Persons” in Dedoplistskaro see annex III).

A large amount of limestone is found in Dedoplistskaro municipality. The presence of these deposits provides a basis for the development of the construction materials production companies. Production of construction materials is concentrated on limestone and lime mining and processing, as well as on the ceramic slabs production. There are two powerful limestone plants operating in the extractive and processing industries.

Despite the above mentioned, agriculture still holds the leading position in the municipality's economy. Several enterprises are engaged in the processing and production of agricultural products

The growth of the economic sector in the municipality is recorded in the following areas: construction, trade, hotels and restaurants, processing industry - meat and dairy products, grapes and fruits, oil and flour production. Industrial development is directly linked to agriculture, so agriculture is an important economic sector of the municipality (Plan of Local Economic Development. Dedoplistskaro Municipality. Georgia, 2019).

4.2 Potential for sustainable development

Natural environment and socio-economic conditions in Dedoplistskaro municipality are offering the potential for sustainable economic and human development based on following main fields of action:

- Sustainable Agriculture
- Sustainable Tourism

This is fully corresponding to the diagnosis analysis and the needs analysis conducted during the preparation of local development strategy, where the term of sustainable development appeared to be a key aspect³.

The main goal of this strategy appears as - ***Enable Dedoplistskaro Population to Live, by 2020, in a Sustainably Developing Municipality.***

To achieve this goal three different strategic objectives have been set, which are the following:

- Strategic Objective 1: Fostering the development of innovative and diversified businesses
 - Priority 1.1: Sustainable development of Entrepreneurship and Businesses
 - Priority 1.2: Sustainable development of Tourism
- Strategic Objective 2: Transforming the area in a place of social and cultural welfare
 - Priority 2.1: An innovative approach of the cultural and recreational life in the LAG
 - Priority 2.2: Operation of an effective public-private-civil society cooperation
- Strategic Objective 3: Enable municipality population to live in a clean environment and make the visitor notice preserved wildlife and wonderful nature first at arrival.
 - Priority 3.1: Improvement of the environment preservation means and /or actions for the mitigation of the climate changes effects

¹ Statutes defined by “Civil code of Georgia”. Chapter two – “legal persons”.

<https://matsne.gov.ge/en/document/view/31702?publication=107>

² GeoStat data

³ (Local Development Strategy. Dedoplistskaro Municipality. Georgia, 2017)

Besides economic development plan of Dedoplistskaro municipality¹ defines overall goals for municipal development as follow:

“Dedoplistskaro Municipality based on attracted investments and improved resources, developed tourism and agriculture sectors is regarded as an attractive municipality for best standard of living, working and investing”.

The same document, in its action plan defines strategic goals as:

1. Improvement of tourism infrastructure and services
2. Improving the services of local businesses and investors
3. Promoting agricultural development

So, sustainable tourism and sustainable agriculture is among strategic objectives and priorities of the municipality.

4.3 Tourism

Tourism is one of the main growing sectors of the economy in the municipality². Although the municipality has never been a well-established tourist destination in the past, it has a great and diverse unevaluated tourism potential. This is conditioned by two protected areas within the municipality, which is 12% of the municipality and by the reach cultural heritage presented within the area. So, the potential finds its strength in both tangible diverse cultural heritage and natural wonders such as:

- Unique landscapes of Vashlovani National Park, Chachuna Managed Reserve and Eagle’s Canyon
- Two lakes containing 18 types of healing salts
- Over 40 historical architecture sites such as Khornabuji Fortress, Bostanaant Tower, Archangel Church of Upper Machkhaani, Niche of Lomisi St. Giorgi and etc.
- A number of archeological sites such as Chapel of Gokhebi dating I-st millennium BC, Kodiskhevi tomb dating II-nd millennium BC, bronze age city remains near Iori river, paleontological monuments and etc.
- Museums such as the Niko Piroshmanashvili State Museum and Dedoplistskaro Museum of Friendship.
- Intangible touristic potential is represented by unique traditional dishes (Dedas Bread, Kizikuri Pastry, Kharcho Bread, etc.), cloths, handicrafts, folk festivals (Eliaoba, Piroshmanoba, etc.) and Kakhetian wine-making traditions.

The existing tourist service facilities (cafes, restaurants, hotels, guesthouses, and hostel-type hotels) in the municipality are not sufficient to meet the current demands, nevertheless, tourist infrastructure and services are being gradually improved.

Detailed statistical information about the tourism in the municipality is hardly available. As tourism development is mainly related to existing protected areas, using statistical data of APA is relevant. Statistical data for the PAs is collected by the administrations every year. According to the data provided by APA, the number of visitors in protected areas has increased by 420% since 2010. See Figure 21.

¹ (Plan of Local Economic Development. Dedoplistskaro Municipality. Georgia, 2019)

² Current assessment does not consider COVID-19 and its effects on different sectors of the economy, including the Tourism sector.

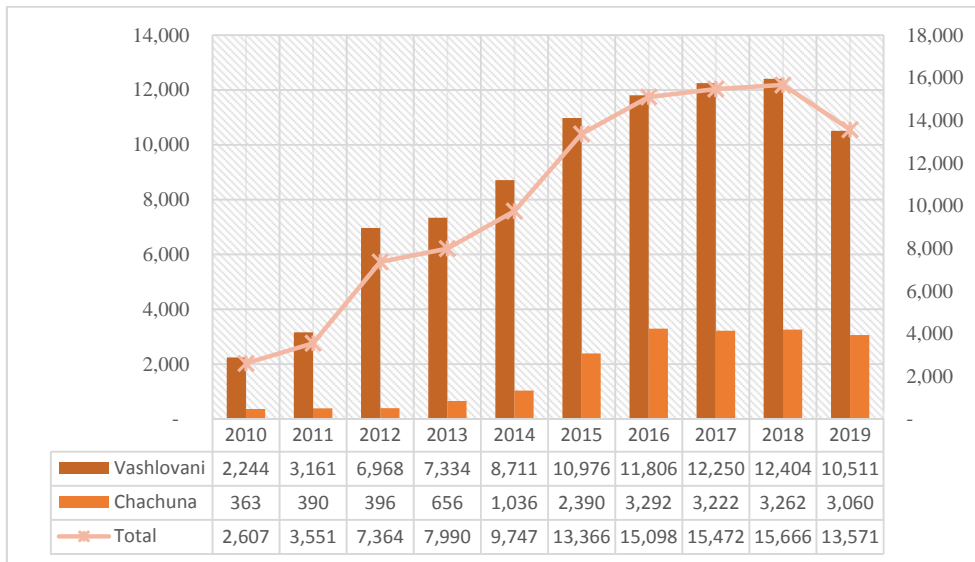


Figure 21: Visitors Statistics to Protected areas in Dedoplistskaro municipality (2010-2019). Source: APA

Figure 22 shows distribution of visitors by months.

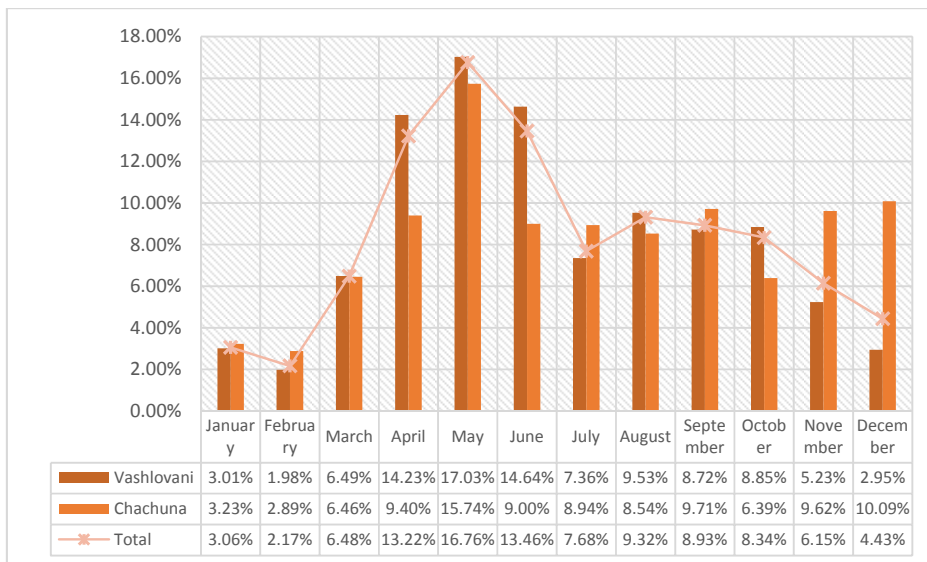


Figure 22: Distribution of visitors by months. Source: APA

The figure shows that April-June is the busiest period for protected areas in terms of visitors. Almost 44% of visitors come during this period.

Figure 23 shows the distribution of visitors by gender in 2016-2017.

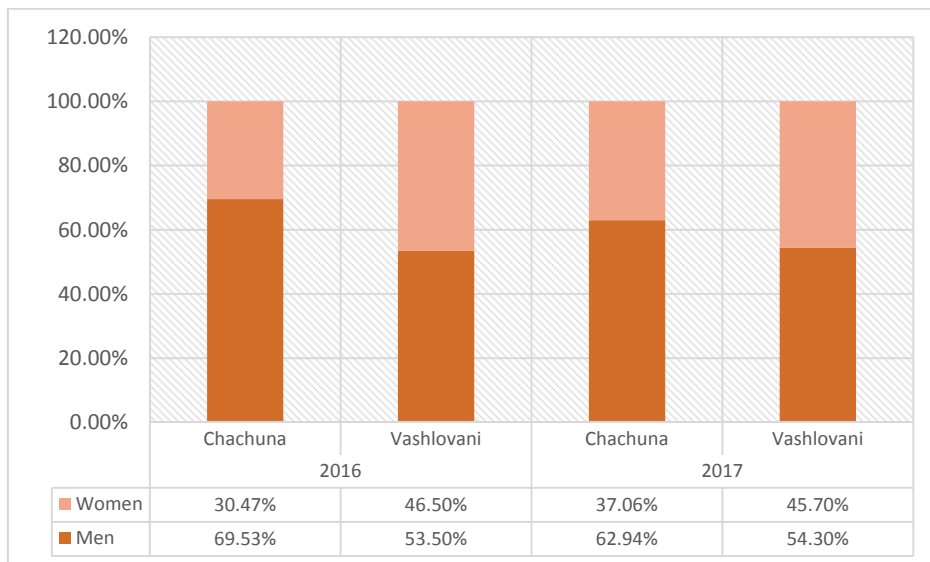


Figure 23: Distribution of visitors by gender (2016-2017). Source: APA

Figure 24 shows the share of foreign visitors in 2016-2017.

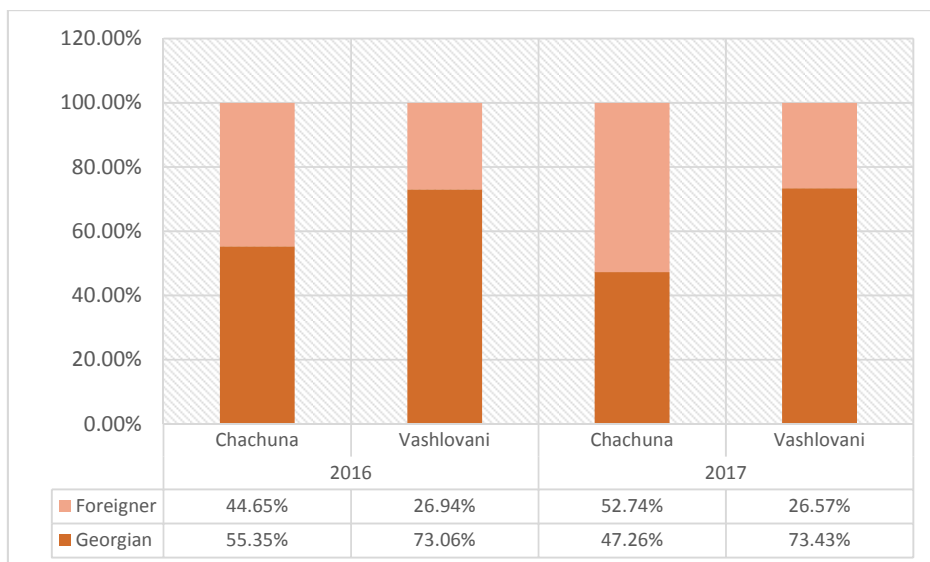


Figure 24: Distribution of visitors by domestic and foreign visitors (2016-2017). Source: APA

It is noteworthy that there are currently 7 tourist routes, 16 night bungalows, 7 picnic areas and 10 camping sites in the protected areas, which are equipped respectively. Also, as of 2019, there are 10 operating hotels and 14 catering facilities. There are 5 wineries/wine cellars in the municipality. In Dedoplistskaro municipality there are 3 museums and 1 exhibit eco-hall in the administration of protected areas. Traditional craftsman, guide and rental services (off-road vehicles, horses) are also available.

The data provided by APA shows that revenues from ecotourism services of protected areas, in parallel with visitors' number, have increased significantly since 2010. The increase was almost 750%. See Figure 25.

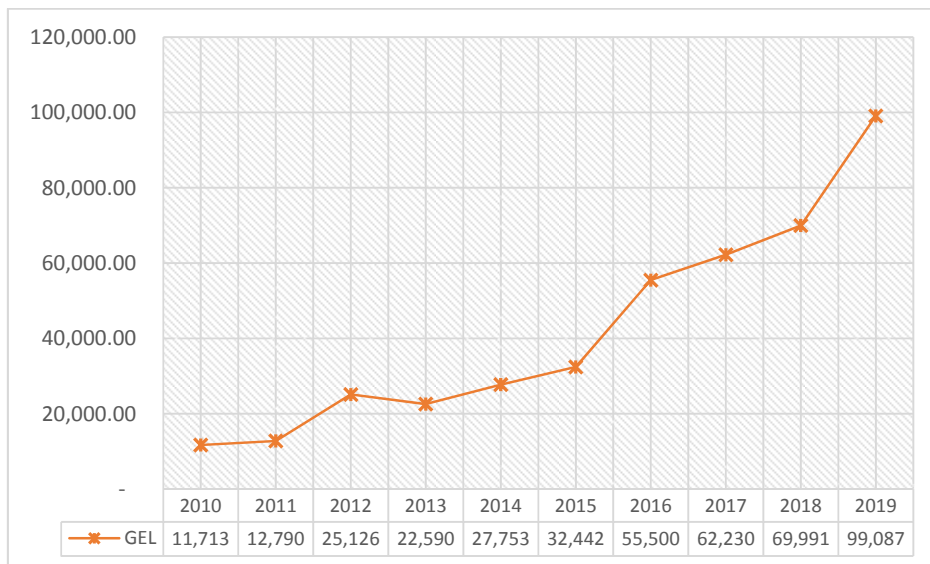


Figure 25: Total revenues from ecotourism services in protected areas of Dedoplistskaro municipality (2010-2019). Source: APA

At the same time, according to the same data (APA), the incomes of the local community members who are employed in the vicinity of the protected areas have significantly increased since 2016. See Figure 26.

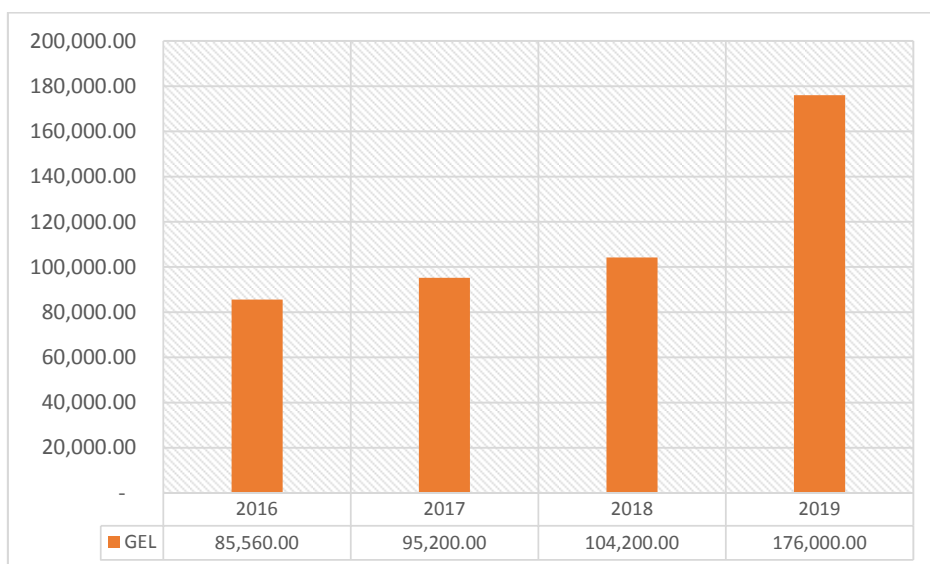


Figure 26: Revenues received by the local population in the vicinity of the Vashlovani NP. (2016-2019). Source: APA

Local community participation is crucial for ensuring sustainable use of natural resources. VPA has already taken steps in this direction and provides visitors with information on the services offered by the local community. However stronger inclusion of the local community is necessary, in order to increase interest and create motivation for diversifying offers and improving service quality.

The local community developed a number of communal services as a result of cooperating with VPA (accommodation, car rentals, guide services, etc.). However, VPA still has not fully utilized the resources of the local community. The rising number of tourists is an incentive for the local community to create and develop tourism products, which will contribute to increasing their social-economic benefits.

The development of tourism products and services in the municipality is co-related with the establishment of the national park. Taking into account the overall national trend of increase of the number of tourists, the trend in the number of tourists visiting the Dedoplistskaro municipality also should be seen as positive. However, growth rates may vary broadly from a municipality to another. It is apparent, that the Vashlovani National Park has an unevaluated touristic potential. Perhaps, it is not known even among

Georgians that the Vashlovani National Park, which is known for its moonlike landscapes, includes real, endemic forests in the Eagle's Gorge, as well as riverside forests (Juma Bay on one of the Alazani river meanders) and a peculiar mud volcano that spits out mud, oil and gas.

The expected increase in tourist flow in the coming years (based on current trends in tourism showed in figures above) will lead to an imbalance between demand and services. Currently, the impediments are lack of municipal transport and less developed tourist and general infrastructure (public toilets, roads in the villages) and services constitute the obstacles to tourism development in the municipality as well. Problems related to the tourism development can be summarised as follow:

- Inadequate transport infrastructure (e.g. insufficient asphalt-covered access roads, remote location of VPA that can be reached only with off-road vehicles; road signs and interpretation boards, etc.).
- Profound underdeveloped touristic infrastructure and services (picnic spots, cafés, leisure parks, toilets, fuel stations, quality of hotels/guesthouses, etc.) and almost absence of professional local guides.
- Lack of information on VPA in social media (VPA administration has no website and existing sources of information); low awareness and absence of the promotion by either state or private tourist agencies.
- The location of the municipality off the main roads and touristic routes, a relatively long distance from Tbilisi and other main touristic sites.
- Lack of diversified tourism products/services (catering, bicycle rentals) and/or eco-products (high potential though). Poor use of modern technology and innovations in the tourism infrastructure (e.g. in Museums).
- Lack of human resources (e.g. visitor management and interpretation).
- Lack of communication/cooperation among key stakeholders (PAs administration, local communities, tour-operators, etc.).
- Not proper waste management system (The waste management plan for Vashlovani NP has been developed¹) and low awareness on environmental pollution and environmental problems in general among locals.
- Miserable state of cultural monuments and inadequate legislative basis and enforcement for the protection of cultural heritage.
- VPA visitor capacity is not evaluated.

Government, donor, and international organizations are implementing projects in various areas of the municipality, Current businesses, startups, and various social projects were funded in this direction. Within the framework of one of the projects², with the initiative of the local development group and with the support of the City Hall, a tourism association was established with the main aim of stimulating the development of local tourism. Despite of, the economic indicator in the Municipality is gradually increasing each year and discussing by business sector representatives, it still remains a challenge non-basic knowledge of filling out application forms and writing business plans.

Tourism Impact on Environment

Vashlovani Protected Areas constitute a vulnerable ecosystem. Based on its distance and landscape characteristics, the territory is a habitat for numerous species of birds, reptiles and mammals. Rapid and uncontrolled tourism development endangers the ecosystem, which is already damaged due to overuse of

¹ APA

² EU-Supported international organization "HEKS-EPER" is implementing a four-year project "Civic Engagement for Economic Development" with strategic goals: poverty alleviation, business diversification in all areas (including agriculture, tourism, etc.), ecology and environmental protection, creation and development of services in the field of services (cultural, educational, technical, domestic, etc.).

pastures and illegal activities of poachers (at a small scale). The negative impact of tourism is also caused by a significant number of visitors, which drive at the territory, leave garbage and litter environment, cut flowers or simply drive at strict protection zones.

In order to tackle the issue, it is necessary to introduce a system of restrictions and guiding instructions based on the Visitor Management Plan. This will minimize negative impact on environment, the main reason for which lack of knowledge and awareness. Most of the negative impact can be reduced by means of relevant demarcation 'Do Not Enter', improvement of road signs and elaboration of waste management system. Minimizing the negative impact is also possible through additional control and imposition of sanctions if necessary.

On the other hand, additional income generated from the visitors could serve as an incentive for local shepherds to reduce damage caused by cattle. This approach requires long-term negotiations with local commune. (Even though local shepherds often host individual tourists, this can hardly be seen as a tourism service due to poor hygiene conditions).

As for the negative impact of visitors, it should be minimalized through developing the system of guides, conducting demarcation of the protected areas and ensuring waste management. Currently, the visitor flow capacity of VPA is limited mainly due to the lack of tourism infrastructure and services, and less due to the need for nature protection. It is necessary to develop guiding principles of visitor behavior and implement effective control mechanisms.

Tourism capacity is determined based on the maximum number of visitors which can stay at VPA without causing a negative impact on environment (alarming habitats, damaging natural resources and ecosystems). Tourism capacity is also linked with the existence of sufficient tourism infrastructure (e.g. number of places for overnight stay). The factors linked with tourism capacity are: #) Availability of accommodation for over-night stay. #) Road infrastructure. #) Hygiene, sanitation and waste management. #) VPA staff capacities regarding service provision and monitoring. #) Negative impact on ecosystems (mainly noise, walking/driving in sensitive ecosystems, littering). (TJS. WWW CauPO, 2020).

Following activities are identified for sustainable tourism development by the Eco-Tourism Development Strategy of Vashlovani Protected Areas (TJS. WWW CauPO, 2020).

- Supporting VPA conservation goals through sustainable tourism development and contributing to the social-economic development of the region.
- Increasing the capacity and the resources of the VPA administration for the full utilization of its tourism potential.
- Strengthening cooperation with the local community and self-government entities, rising environmental awareness and involving relevant stakeholders in the processes of management and tourism development at the protected areas
- Developing new inclusive tourism products tailored to the needs of visitors with the participation of the local community aiming at income diversification and generation.
- Increasing the popularity of VPA by ensuring its relevant positioning at the local and international levels and receiving the status of a Geo-park by 2023.

All listed activities are in full compliance with the requirements outlined in the local development plans.

4.4 Agriculture

4.4.1 General background

Agriculture has the largest share in the sectoral structure of the municipality - 70.5%. In its turn, the main areas of agriculture are - field husbandry, animal husbandry- food processing (coarse food) and viticulture-fruit growing, as well as newly developed fields of poultry and beekeeping.

The total area of agricultural land in the municipality is 181,690 hectares. It is one of the richest municipalities in the country in terms of arable lands. The structure of agricultural lands are follow:

- **Arable lands** - 56,000 ha, with cereals (wheat, barley and sunflower) being harvested annually. Dedoplistskaro represents one of the most traditional and important production areas for cereal cultures. The main crops are wheat and sunflowers, others such as maize or vegetables are only of minor importance. Cultivation of rye, oat and millet has decreased. Among the agricultural plantings, present in the municipality, are wheat, barley, oats, corn, bean, sunflower, potato, vegetables, watermelon).
- **Perennial crops** – occupied smallest area. Limited number of perennial crops can be seen in existing fruit gardens in the municipality (apple, pear, quince, plum, cherry, sweet cherry, Mirabelle plum, peach, walnuts, hazelnuts). Vineyards are actively being cultivated in the municipality as well. As of today, 1,500 hectares of vineyards have been allocated, a 30% increase over the previous years. Before the breakup of the Soviet Union, grapes were grown on 13,600 ha of land in the municipality but afterward, the irrigation channels degraded and were looted away.
- **Pasture lands** – 65,271 ha. 65,271 hectares are pasture lands. In total, municipality owns 122,000 ha pasture lands, but big portion of this land (about 55,000 ha) are given to Akhmeta and Kazbegi municipalities for temporary use to feed their numerous sheep flocks¹. Neither the sheep transhumance routes, the total length of which is over 150km, nor the pastures, receive proper attention and care. Consequently, overgrazing, zoonotic outbreaks, erosion, desertification and reduction in livestock productivity are widespread. After the Soviet Union, a part of the state-owned pastures went under private ownership. The majority of it is currently under the responsibility of the Ministry of Economy. Each village also has a so-called community pasture, which is used as pastures for the local livestock (in many cases, these pastures are agricultural lands, which are not processed. These unprocessed land plots are also used as transient pastures). Practically no agency is doing management (protection, rehabilitation or cultivation) of the state and community-owned pastures. Consequently, these pastures are usually overgrazed and degraded. In the municipality, as well as in the rest of the country there is no sustainable management planning practice in regard to pastures.

4.4.2 Farming practices

The agricultural sector of the Dedoplistskaro municipality is dominated by small family-type farms. Agriculture is the main source of livelihood that is predominant among such farms. According to the 2014 Agricultural Census, there were 7,466 farms in the municipality. The number of agricultural enterprises is relatively small. Farmers follow viticulture, fruit production and growth of cereals, vegetables and horticultural crops. At the same time, they have a small amount of cattle to produce milk and other dairy products. The income of such small farms is usually rather small and strongly depends on the sale of any type of product. The maximum size of such family-owned land is 1.25 ha (the amount of land handled by the one household as a result of the land reform). The use of agricultural machinery by these groups is rare due to their high price. Technology is usually only used for the main agricultural activities. The rest is done by manual labour. Although farmers can use

¹ (Local Development Strategy. Dedoplistskaro Municipality. Georgia, 2017)

full range of commercial cultivation services from the local branch of LTD Mechanization, the small plot holders are not a priority for the LTD Mechanization due to effectiveness matters. So, some larger farmers choose LTD Mechanization, others go for cheaper alternatives in the form of small local agricultural services providers who own single units of tractors and combines with limited, outdated aggregates and functions.

4.4.3 Livestock

Livestock farming (sheep, cow), along with crop production (wheat, barley and sunflower), represents the main agricultural sector of the municipality. More than 50,000 heads of sheep are wintering here at present. The municipality is especially rich with winter pastures (Eldari and Shiraki pastures). A big share of Georgian sheep comes to the municipality for winter grazing.

Transhumant livestock farmers

Tush farmers, who still follow a traditional, transhumant sheep farming. They use Tusheti for summer grazing and Vashlovani and surrounding areas as winter pastures. This type of migration farming developed over centuries. Winter pastures of the Tush community are mainly located in Vashlovani and adjacent territories. It should be mentioned also that not only Tush livestock farmers use these pastures and migrate to other areas than Tusheti for summer grazing. An average farm (for winter grazing) in and around Vashlovani constitutes 300 ha pastureland. Rough estimations of around 60-80,000 sheep migrating from Tusheti every year.

The farms in Vashlovani represent either (1) family owned and run businesses, (2) corporately owned but privately managed properties or (3) private farms managed by individual shepherds (RECC 2013). Most of the farms have a lease contract; the minority has a sub-lease contract which is not officially registered (20-30% according to ELKANA 2014).

The use of winter pastures for grazing starts in October and lasts until April or May, depending on the quality of the winter pastures and the opening of the road to Tusheti in the Caucasus Mountains to migrate to the summer pastures.

Transhumant livestock farmers arrange the use of agricultural land for grazing with private land users. This is based largely on traditional arrangements. Still conflicts are prevalent as ownership arrangements change and fees are increasing year by year. Transhumant livestock farmers are also renting municipality pastures for their flocks.

Products and value chain

During the stay on the winter pastures, the main attention is paid to wintering of the livestock and the initial feeding and strengthening of lambs. Thus, the commercial use of livestock products is less relevant and only a small number of farmers make sheep and cow cheese. Cow milk is more important during the autumn-winter period of which much is sold to the Dedoplistskaro Dairy plant. If some cheese is produced, it is sold in markets such as in Sabatlo. Livestock is sold mainly in Kasristskali and Dedoplistskaro. The commercial use of the livestock increases during summer and autumn. Milking and cheese making is the focus on the summer pasture. Milk is processed to cheese and stored in plastic bags. Farmers sell lambs and cheese in late August and September. This is the time period when farmers need the cash to pay salaries to shepherds and rent the winter pastures. Meat is mainly sold in autumn in the lowlands during migration to the winter pasture.

The main products in this sheep farming system are milk, cheese (traditional Guda cheese), meat and living sheep. Value chains are generally still weak. Related to the sheep wool, it should be mentioned that the wool industry is very underdeveloped and unprofitable for many actors occupied in this field (because of the systematic problems in this field - improper wool shearing and classifying. Equipment for processing to increase the value of the wool is also lacking). Thus, prices for wool have decreased and it

is not profitable to bring it to the market. The wool is not really used at present and generally left on the place of shearing.

4.4.4 Main challenges

The main problems thwarting agricultural development are lack of irrigation water, long droughts, virtually no windbreaks, shortage of effective herbicides, lack of veterinary services, weak land management etc.

- **Lack of irrigation water, faulty irrigation systems.** Due to the irrigation water shortages, farmers are operating only small orchards and gardens - mostly for local consumption. As a result, the municipality imports most of the fruits and vegetables from neighboring municipalities. There is no comprehensive, central irrigation system in the municipality. For now, simple irrigation systems are arranged by individual farmers owning lands along Alazani and Iori rivers. Alazani (North-East) and Iori (South-East) are the only rivers in the municipality, besides small tributary rivers, which never dry out. The surfaces of underground water reservoirs appear to be slowly going deeper and do not offer practical solution to the acute issue of irrigation water shortage. After the collapse of Soviet Union, destruction of irrigation systems significantly reduced crops. Added to this is delayed application of agro-technical measures, caused by lack of organic and mineral fertilizers, their high prices, violation of seed cycle, low quality seeds, lack of agricultural equipment, negative impact of winds caused by lumbering of field protecting forest zones, and etc.
- **Wind erosion.** Wind erosion processes are also affecting the agricultural lands. Majority of agricultural lands are affected by soil erosion caused by wind and water. Windbreak stripes play an important role here. Such stripes were widely distributed in the municipality area during the Soviet Union. During the post-Soviet energy crisis, they have almost completely been destroyed, which contributed to a decrease of the productivity and an increase of wind erosion processes. In the 1990s, when domestic energy supply system broke down across the country, many thousand hectares of land in the municipality became subject of wind erosion due to the intensive cutting of windshields for firewood. From formerly 1,800 km of windbreaks during the Soviet era, some 650 km were left in 1999. After devastating fires, only 70 km were left in 2016 (assessment by GIZ-IBiS). Added to this poor soil management practices prevalent among local farmers for the last 10 years. In the end the municipality lands have significantly degraded in quality and fertility. So far, about 8,000 ha (4%) of agricultural lands are fully wasted due to erosion (Local Development Strategy. Dedoplistskaro Municipality. Georgia, 2017).
- **Overgrazing.** Neither the sheep transhumance routes, the total length of which is over 150km, nor the pastures, receive proper attention and care. Consequently, overgrazing, zoonotic outbreaks, erosion, desertification, and reduction in livestock productivity are widespread. Local pastures are enough for the amount of livestock owned in the municipality, but grazing is not controlled.
- **Desertification.** Ongoing desertification process and natural disasters such as hail and floods in riverine villages that affect local farmers. As research statistical analysis shows in Dedoplistskaro municipality, the desertification process was more pronounced. In terms of intensive exploitation of the pastures, soil cover and unprocessed land is severely decomposing; it causes significant decrease of soil density, often – total wash-off and denudation of salty strata, which is one of the main reasons of intensive development of erosion processes. Strata that are washed down and brought down as a result of erosion and denudation processes, consist of salty clays and sandstones, and cause salting of soil, which has negative impact on vegetative cover and composition of the pastures (CENN. Mercy Corps, 2013).
- At and it should be mentioned that the increase in agricultural production is hampered by *less access to agricultural services and agro-technology* and a lack of specialists in the field. The spread of diseases and pests is also an important obstacle. Since cattle breeding (cows, sheep) is a

major area of the agricultural sector, there is a need to raise farmers' awareness and develop their veterinary skills.

Climate change

Problems related to climate change should be mentioned separately. The Third National Communication to the UNFCCC stresses the fact of the increasing vulnerability of the agriculture sector. One of the “hotspots” in this regard is Dedoplistskaro municipality. Where climate change models for the municipality indicate that irrigation requirements for crops are expected to rise¹.

As a result of climate change in Georgia, the average annual temperature during the period of 1961- 2010 has been increasing. During this period the average annual temperature increased by 0.4-0.5⁰C. The one of the highest trends of increase in temperature was observed in Dedoplistskaro (0.7⁰C). In the municipality, the ongoing changes in climatic parameters, namely, heavy rains, reduction in provision of moist for plants in April and July, a significant rise of strong winds and reduction (by 15%) of average seasonal values of hydrothermal coefficient, induce the enhancement of erosion process on pastures. It is expected that the average annual temperature of air will have risen by 3⁰C and the precipitation will have reduced by 14% in Dedoplistskaro by 2100. The annual sum of precipitation in will have reduced by 4% already by 2050. During the vegetation period, the temperature will have grown by 5 degrees, while precipitation will have reduced by 90 mm, i.e. a stronger aridization of the climate will have taken place. Due to projected climate changes, instead of Artemisia, meadow-grass, brome, and wheatgrass the winter pastures will be dominated by grasswort, salsola and saltwort. This trend has already been observed in the current period. Pastures and hay meadows in denudative-erosive and accumulative landscapes will be close to the desertification threshold. The commonly found bluestem pastures of east Georgia will be under threat, as the vegetation period of the bluestem starts comparatively late (at the end of April, in May) and withers at 35-40⁰C degrees. Also, the transitional pastures (at 500-1,000 meters above the sea level) will be endangered as they will develop under relatively more moist conditions (REC Caucasus, 2019).

Experts suggest that substantially more water will be required in future to maintain the current cropping patterns and irrigation water shortages are predicted to become an issue of concern. In the end the most negative impacts of climate change in Dedoplistskaro will be the increase in drought, water depletion and land degradation.

4.4.5 Potential impacts on proposed biosphere reserve objectives.

VPA landscapes have been strongly shaped during centuries of livestock grazing and this factor still appears to play an important role in maintaining the mosaic of habitats in Vashlovani. Recognizing this and traditional rights claimed by the local livestock herders, livestock grazing is allowed on the pastures within the traditional use zone of VNP. Nevertheless, livestock grazing will also remain a major threat to Vashlovani grassland ecosystems as no effective monitoring and management is in place yet. (Hirschelmann, et al., 2016)

In addition to direct influence such as overgrazing and subsequent erosion, human presence as well as livestock guarding dogs cause disturbance to wildlife and result in uncontrolled fires, illegal logging, waste-related problems and human-wildlife conflicts. Even illegal hunting is often facilitated because local farms are sometimes used by poachers as a base camp. There are also sites that are especially degraded mainly due to seasonal (to/from summer pastures) and daily (to/from water sources) migration of flocks.

Poaching is another important threat. The actual level of poaching is unknown. Target species include wild boar, bear as well as ground nesting birds such as Chukar partridge and pheasant. Illegal hunting that occurs outside the park is also a significant threat (TJS. WWW CauPO, 2020). For

¹ <https://mepa.gov.ge/En/Files/ViewFile/35552>

example, one of the newly released gazelles was killed by a poacher outside VPA in Samukhi valley. The risk of poaching is highest in the autumn. (Hirschelmann, et al., 2016).

Inappropriate practices of land and soil are hampering the sustainable development of these areas, especially by the use of post-harvest burning, pesticides, growing of monocultures, and the absence of the wind strips.

Section 5. Recommendations for zoning

According to the requirements of ``Biosphere Reserves Seville Strategy and the Statutory Framework of the World Network`` (UNESCO, 1996) and to meet three main functions of the Biosphere reserves, three zones have been identified in Vashlovani planned Biosphere reserve:

1. Core zone.
2. Buffer zone.
3. Transition zone.

See Figure 27.

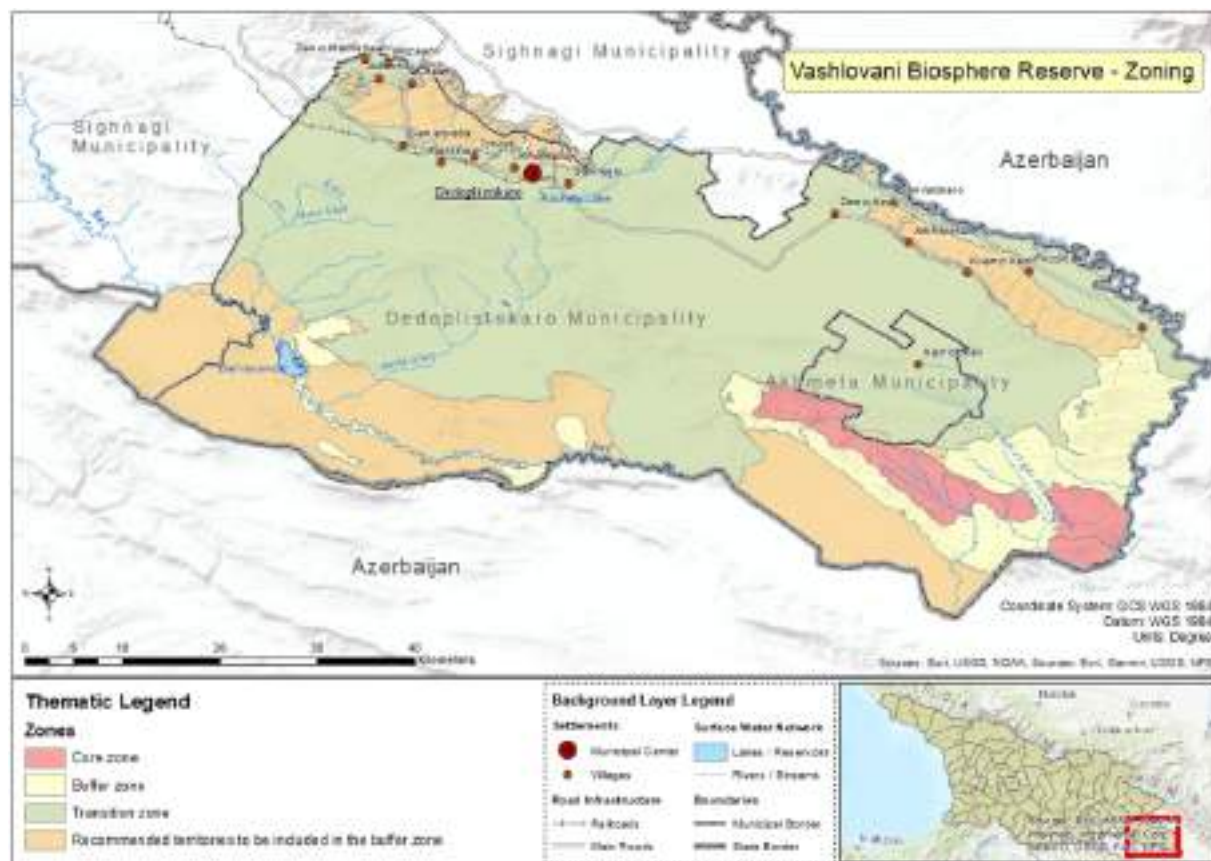


Figure 27: Propose zonation of Vashlovani Biosphere Reserve

Below, Table 20 shows areas of each zones of the proposed Vashlovani Biosphere Reserve.

Table 20: Areas of the proposed zones of the Vashlovani Biosphere Reserve

Zone	Area (ha)	Share from the total area (%)
Core zone	11,892	4.70%
Buffer zone	28,097	11.10%
Transition zone	211,963	83.80%
Total	252,952	

Below Figure 28 shows the distribution of area by the different zone of the proposed biosphere reserve

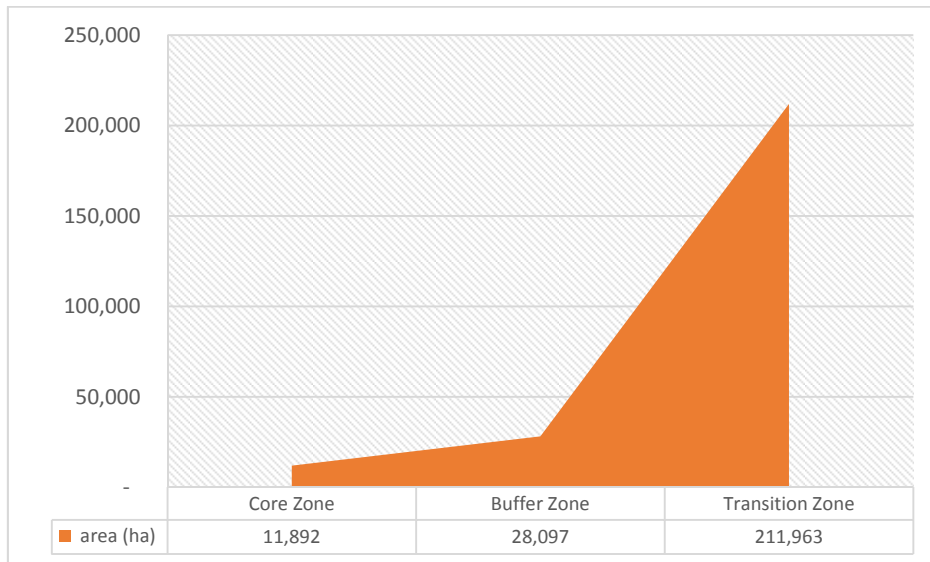


Figure 28: Distribution territory of the proposed biosphere reserve by different zones.

Below a detailed description of each zone is given with related recommendations.

5.1 Core zone

Zone includes Vashlovani State Nature Reserve (9,962 ha) and Strict Protection Zone of Vashlovani National Park (1,930 ha). Consequently, total area of core zone is 11,892 ha.

Vashlovani State Nature Reserve and Vashlovani National Park are established by the law of Georgia on "Establishment and Management of Tusheti, Batsara-Babaneuri, Lagodekhi and Vashlovani Protected Areas" (2003). According to the mentioned law Vashlovani State Nature Reserve is established for the purposes of preserving the dynamic and intact condition of nature, natural processes and genetic resources and for the purposes of carrying out scientific research, educational activities and environmental monitoring, which activities have an insignificant impact on nature, natural processes and genetic resources.

According to the on "Establishment and Management of Tusheti, Batsara-Babaneuri, Lagodekhi and Vashlovani Protected Areas" and management plan¹ for Vashlovani Protected Areas only following activities are allowed within the Vashlovani Strict Nature Reserve and within strict protection zone of Vashlovani National Park:

- Not-manipulate scientific research (not-manipulative – without extraction of natural materials (collection only few amount of specimens of plants, seed, tubers, invertebrates and small size vertebrates is allowed only) establishment of laboratories and testing station, the introduction, reintroduction and translocation of animal species, measures for forest maintenance and restoration);
- Educational, monitoring activities and cadastral works.
- Restricted movement of personnel of the Vashlovani State Reserve Administration by motor vehicles and air vehicles in order to perform official duties;
- Carrying out active protection measures (arranging protection infrastructure and firefighters, combating pests with biological methods, etc.).

¹ Management plan of Vashlovani Protected Areas is out of date as was approved in January 2014 by the Resolution # 18 of the Government of Georgia for a period of 6 years. While new management plan will be adopted, the Vashlovani Protected Areas will be managed in accordance with Rules for Temporary Regulation, which will be adopted by the Government of Georgia.

All area of the Vashlovani State Nature Reserve and Strict Protection Zone of Vashlovani National Park are owned by state and managed by LEPL Protected Areas Agency (under the MEAP) through local administration.

Consequently, core zone of Vashlovani Planned Biosphere Reserve fully compliant (compliance) with the requirements of “Biosphere Reserves Seville Strategy and the Statutory Framework of the World Network” regarding core zones of Biosphere reserves – the area is legally constituted and devoted for long-term protection, according to the conservation objectives of the biosphere reserve and has sufficient size to meet these objectives. See Figure 29.

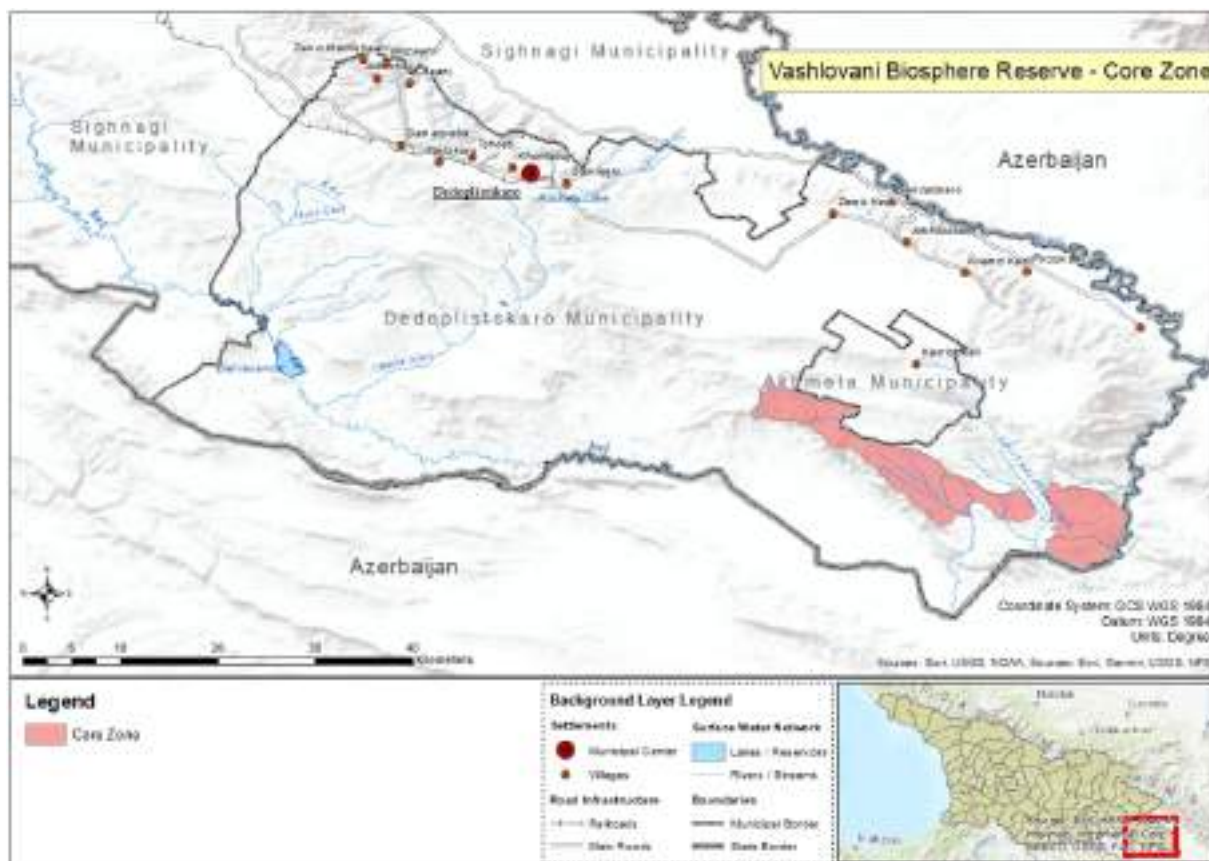


Figure 29: Core zone of proposed BR of Vashlovani

5.2 Buffer zone

Buffer zone includes:

- The rest part of Vashlovani National Park - Recovery zone, traditional use zone, visitor zone and administration zone, with total area 23,091 ha.
- Chachuna Managed Reserve without area allocated for hunting farm (4,697 ha),
- Alazani floodplain forests Natura Monument (201 ha).
- Artsivi (Eagle) Gorge Natural Monument (98 ha).
- Takhti-Tepa Natural Monument (10 ha).

Total area of buffer zone is 28,097 ha.

Core zone of Vashlovani Planned Biosphere Reserve is buffered by the Traditional Use zone of Vashlovani National Park, as well as by the part of Visitor’s zone located at East-south edge of core zone, between core zone and State border with Azerbaijan.

Below, in the Table 21 is given allowed activities in the traditional uses and visitor zone of Vashlovani NP.

Table 21: Allowed activities within traditional use and visitor zones of VNP

Traditional use zone	Visitors zone
<ul style="list-style-type: none"> • Conservation, maintenance and recovery of the flora and fauna species populations and habitats. • Protection and monitoring of hydrological systems. • Protection of forest ecosystems and reforestation. • Conducting non-manipulative and manipulative scientific research. • Rehabilitation activities. • Carrying out monitoring works. • Cadastral works. • Controlled access of visitors for ecotourism and recreation. • Arrangement of the infrastructure of the visitors in harmony with the environment (roads, paths, picnic places, “bungalow-shelters”, camping places, visitors, and information centers). • Carrying out active protection measures (arranging firefighters, clearing fire-hazardous areas, combating pests with biological methods, etc.). • Residents of surrounding settlements are allowed to use non-timbers resources, fire wood cutting (5 m3 wood for each household), use of pastures, arrangements of beehives, sport and amateur fishing, arrangement traditional shelters for shepherds and tourists on traditional winter pastures, as well as domestic animal stalls; • Arrangement of transhumance routs with small infrastructure. 	<ul style="list-style-type: none"> • Controlled access of visitors for ecotourism and recreation. • Adventure-recreational activities (access by off-road vehicles, horseback riding, fishing in the strict framework of seasonality and quotas). • Carrying out eco-educational activities. • Carrying out active management measures (manipulations) related to the restoration of ecosystems and natural resources. • Conducting non-manipulative and manipulative scientific research. • Carrying out monitoring works. • Cadastral works. • Carrying out active protection measures (arranging firefighters, clearing fire-hazardous areas, combating pests with biological methods, etc.). • Obtaining biological and other field data and information required for scientific research. • Arrangement of any kind of permanent or temporary equipment and signs on the basis of the special right within the framework of the permitted activity. • Arrangement of the infrastructure of the visitors in harmony with the environment (roads, paths, picnic places, “bungalow-shelters”, camping places, visitors, and information centers). • Clearing the forest in order to protect it from fires and cutting and removing grouped dried trees in a 20-meter strip along the side borders of roads and paths. • Carrying out all measures on the paths and roads of the visitor zone and along the 20 m strip along them, which ensures the free and safe movement of visitors. • Collecting the amount of wild fruits, berries and mushrooms that visitors have during their stay in the park.

Core zone form east-south is buffered also borderland – a part of a border area of a maximum of 500 meters in width that directly adjoins the State Border¹. According to current law² the Government of Georgia shall establish a borderland based on the recommendation of the Ministry of Internal Affairs of Georgia.

The territory of a borderland shall be state property only. Within the borderland, historical and material cultural monuments and flora and fauna are protected by the Border Police of Georgia. In a borderland, any activity, which is not associated with its maintenance, inspection of border signs and with State Border protection measures, is prohibited, except when otherwise provided by a treaty or international agreement of Georgia. In individual cases, the Prime Minister of Georgia have the right to allow certain kinds of economic activity in a borderland.

¹ According the law of Georgia on the “State Border of Georgia”

² Same. Law of Georgia on the “State Border of Georgia”

Buffer zone along north-east part of core zone should be identified based on following land tenure and land use studies and based on consultations with local authorities and farmers.

Figure 30 shows the state of land registration along north-east border of the core zone. There are state, municipal, private and not registered land plots adjacent to the core zone.

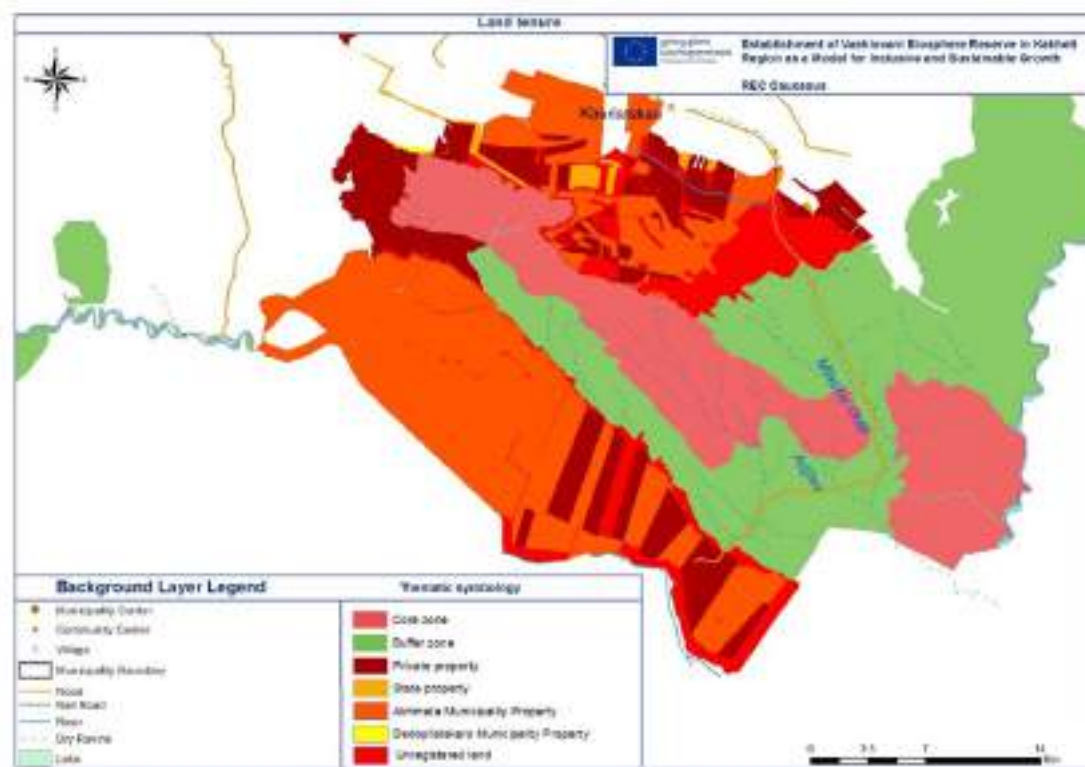


Figure 30: Land tenure along north-east border of Core zone and within planned Eldari Plain Multiple Use Area.

Below, Figure 31 shows areas to be included in the buffer zone along north-east border of the core zone. State and municipal land plots adjacent to the core zone are recommended to be included in the buffer zone. However, part of them are used for agriculture purposes. Therefore, inclusion of this land plots in the buffer zone should be negotiated with National Agency of State Property, Dedoplistskaro and Akhmeta municipalities and land users. Only one land plot adjacent to the core zone is private owned. Inclusion of the part of this land plot in buffer zone should be negotiated with owner.

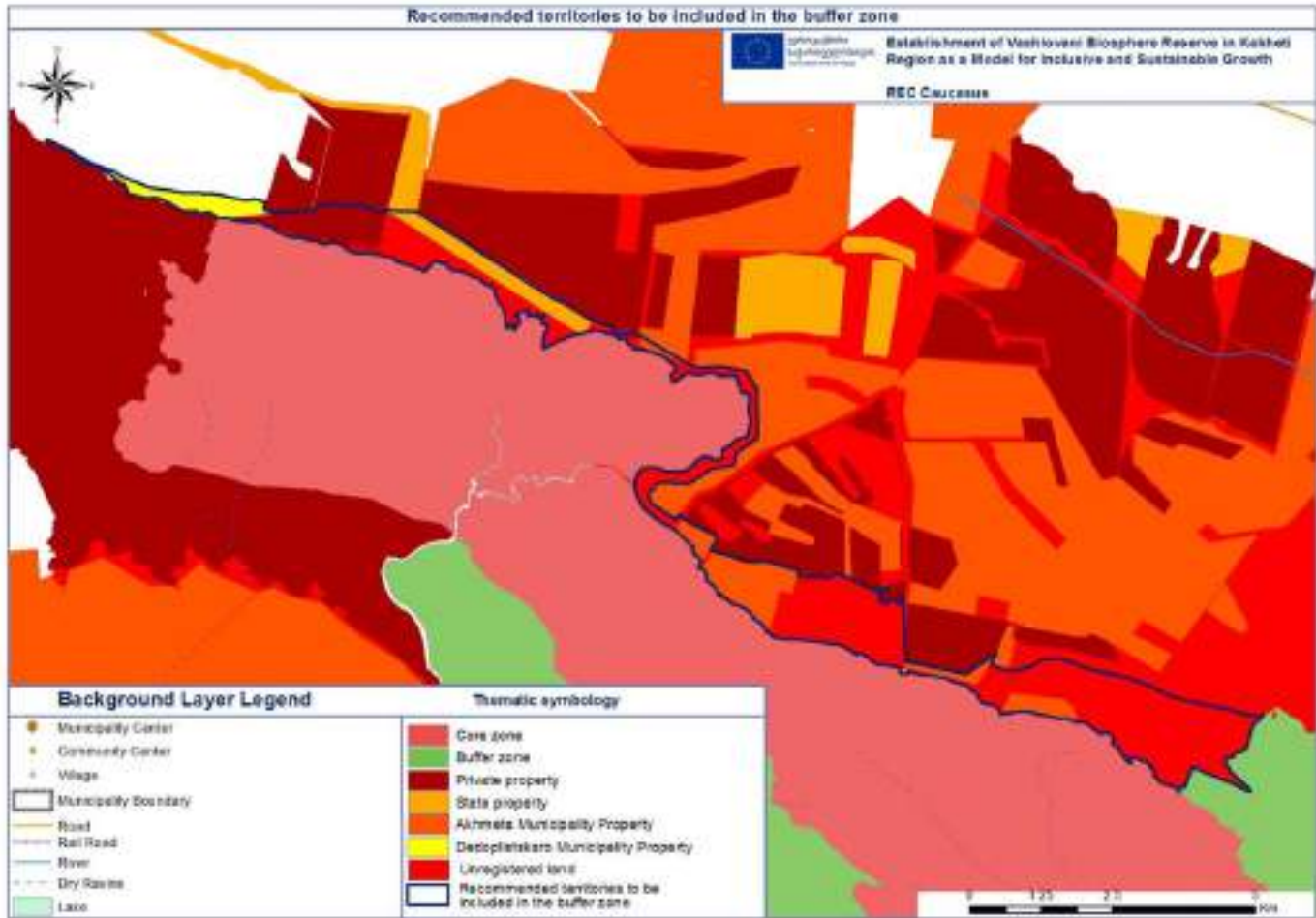


Figure 31: Proposed buffer zone along north-east of the Core zone

There is great possibility further expansion of buffer zone of Vashlovani Planned Biosphere Reserve. The following areas is recommended to be included in the buffer zone once they are established by law:

- **Eldari Plain Multiple Use Area** (corresponds to IUCN category VI of PAs management) is intended to be established at the south-west of the Vashlovani National Park. Total Area of Eldari Plain Multiple Use Area will be 13,339.1 ha and intended to be established for restoration of Gazelles population, as well as to support sustainable farming activities-oriented use of renewable natural resources. Hunting will be prohibited. The protected area will be managed by local authority.
- **Kotsakhura site** proposed to be included in the Emerald Network. Total are of the proposed site is 38,446.9 out of which 29,821 ha is located within Dedoplistskaro municipality. The site will be submitted for designation after finalization of studies based on which specified area of the Emerald site will be determined.
- **Special protected Area for Birds (SPA 4)**. Only part of SPA 4 located within Vashlovani Protected Areas is designated as Vashlovani Emerald Site. Rest part of the SPA 4 located on the north-east and south-west (almost same as Eldari Plain) of Vashlovani Protected Areas may be included in the buffer zone of Biosphere Reserve.

The following areas can be considered as well as to be included in the buffer zone if their further management will be more focused on conservation than use natural resources:

- Hunting farm within the Chachuna Managed Reserve (335 ha).
- Forestry areas managed by the National Forestry Agency.

5.3 Transition zone

At present, all above mentioned areas are recommended to be included in the **transition zone** of Vashlovani Biosphere Reserve. **Transition zone** will cover all territory of Dedoplistskaro municipality except those included in the core and buffer zones of Vashlovani Biosphere Reserve. Consequently, total area of transition zone will be 211,963 ha.

Urban areas (Dedoplistskaro town, villages), agriculture lands (arable lands and pastures), forestry areas, areas designated for mining and oil operations will be included in the transition zone.

GIS Analyses shows possible intersection with the buffer zone of licensed areas. See Figure 32.

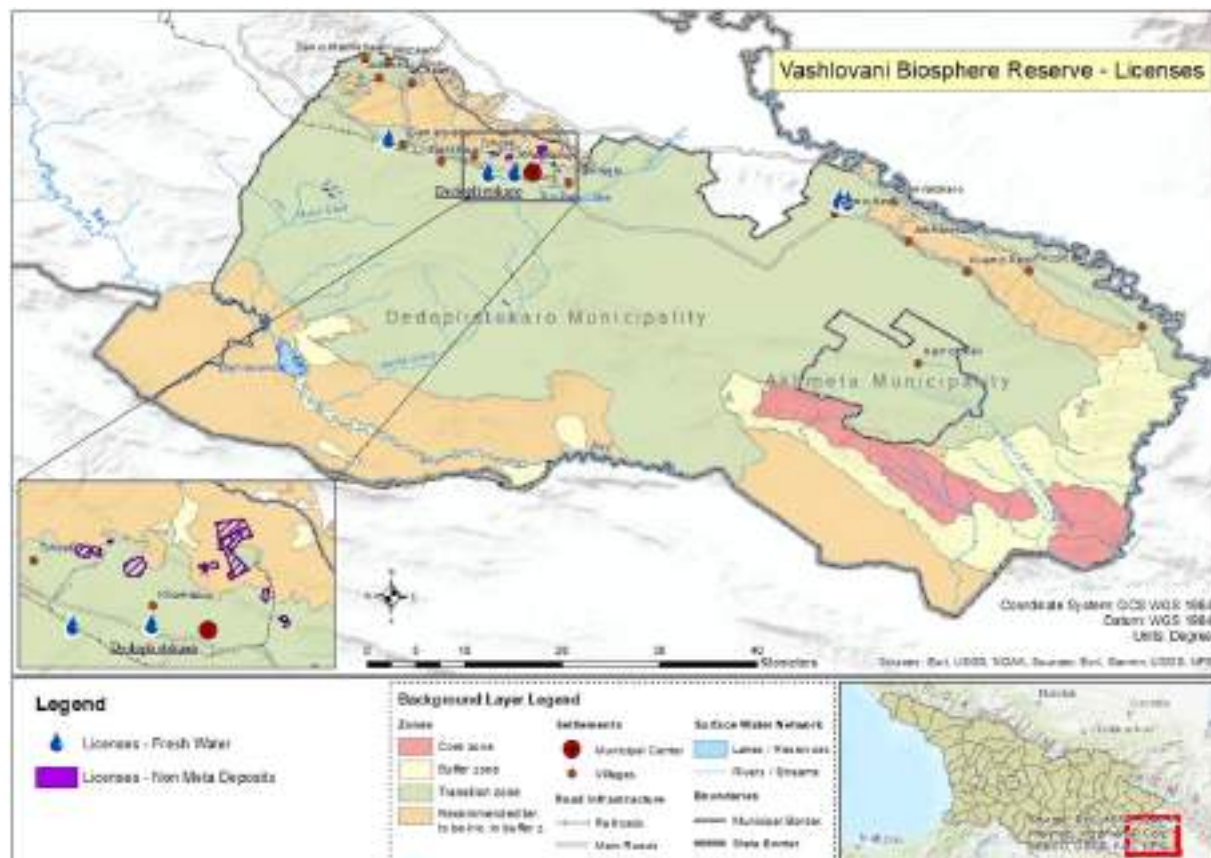


Figure 32 Intersection of licensed areas with buffer zone.

Detailed list of licenses, which intersect with the buffer zone of proposed BR is given below, Table 22.

Table 22: Licensed areas, intersect with the buffer zone of proposed BR

#	# of License	Location	Type of resource	License owner	Date of registration and license validity	The volume of resource (Min. Max)	Area (ha)
2	1000326	Dedoplistskaro municipality	Limestone	Ltd. "Rustavis Foladi"	29.12.11 – 15.02.27	Total extraction 12,157,955 tons (min. 300,000 tons per year)	8.45
3	1000364	"Dedoplistskaro" limestone deposit. Near Dedoplistskaro	Limestone	Ltd. "Georgian Mega Cement Group"	12.01.12 – 11.06.31	Total extraction 2,324,000 tons	3.80

4	1000557	“Dedoplistskaro” limestone deposit. Near Dedoplistskaro	Limestone	Ltd. “Georgian Mega Cement Group”	20.04.12 – 17.03.32	Total extraction 1,193,100 tons	9.70
5	1000794	Near Dedoplistskaro	Limestone	Ltd. “Heidelberg Cement Georgia”	21.08.12 – 15.02.27	Total extraction 29,048,000 tons	26.70
6	1001352	“Dedoplistskaro” limestone deposit. Near Dedoplistskaro	Limestone	Ltd. “Terjola Career”	01.11.13 – 22.08.26	Total extraction 31,413,800 tons	31.26
7	1002256	“Dedoplistskaro” limestone deposit. Near Dedoplistskaro	Limestone	Ltd. “Kalciti”	13.01.15 – 14.01.35	Total extraction, 401,000 m ³	4.01
9	1003934	“Dedoplistskaro” limestone deposit. Near Village Khornabuji	Limestone	Ltd. “Kalciti”	30.08.16 – 31.08.36	Total extraction, 350,000 m ³	5.00
10	1003981	“Dedoplistskaro” limestone deposit. Town Dedoplistskaro	Limestone	Ltd “Road construction company – Serpantini”	16.09.16 – 17.09.31	Total extraction 463,040 tons	1.53
11	1004395	“Dedoplistskaro” limestone deposit. Near Village Khornabuji	Limestone	Physical person Archil Gochashvili	06.04.17 – 07.04.27	Total extraction, 56,000 m ³	0.80
12	1004925	“Dedoplistskaro” limestone deposit. Dedoplistskaro municipality	Limestone	Ltd. “Terjola Career”	28.09.17 – 22.08.26	Total extraction 1,368,900 tons	2.66
16	10000415	“Pirosmani” sand deposit. Near village Pirosmani	Sand	Ltd. “Didgori”	13.12.18 – 14.12.21	Total extraction, 33,100 m ³	0.66

It is recommended to change the boundaries of the buffer zone and allocate licensed areas within the transit zone.

Section 6. Sustainable Development priorities and objectives of the biosphere reserve

6.1 Main objectives of the proposed BR

Connecting the needs of the people to nature conservation and development goals by sustainable development is a clear strength of the BR concept.

A BR can find answers and develop guidelines for various serious challenges, especially as the UNESCO concept is quite flexible and leaves room to adjust to the region's needs. This can be done by moderation and mitigation of land use conflicts, joint development of land use agreements and guidelines with land users and other stakeholders or support in developing projects and initiatives to test and show best practice approaches in natural resource use. There is a strong need for sustainable development and regional planning in Dedoplistskaro municipality for which a BR can be used as a framework and tool. It can foster cross-sectorial cooperation on all levels and improve cooperation of municipalities which is lacking joint strategies and unified structures up to now.

Considering the high conservation value of the region, the existing PAs, traditional land use schemes and the small-scale primary sector, Dedoplistskaro in its complexity is very suitable for the implementation of the BR concept.

Every BR should define its own individual goals along the three functions of UNESCO BRs. Following goals/objectives for the planned BR in Dedoplistskaro can be formulated¹.

- Sustainable development: Promotion of sustainable use of the natural and cultural resources for the economic development of the local population through
 - Promotion of a biodiversity-friendly land use adapted to climate change.
 - Development of viticulture and beekeeping.
 - Improvement of the development, quality control and marketing of agricultural products (mainly from viticulture and beekeeping).
 - Improvement of pasture management.
 - Extension and improvement of community-based touristic services and infrastructure.
- Conservation of biodiversity and natural resources
 - Maintenance and rehabilitation of biodiversity and quality of soil in the agricultural ecosystems of Dedoplistskaro.
 - Maintenance and restoration of grasslands for pastures.
 - Conservation and restoration of forest biodiversity and ecosystem services.
 - Improved adaptation to climate change.
 - Maintenance of abundant and clean water resources.
 - Support of Vashlovani Protected Areas conservation objectives.
- Research, education and monitoring: Contribution to the goals for sustainable development and conservation in the region by
 - Systematical and long-term research on state and developments of biodiversity and natural resources outside of protected areas (soil quality and erosion; plant, bird and mammal diversity; poaching), involving universities and government.
 - Comprehensive assessments regarding problems and needs in tourism.
 - Increase of environmental education activities with more involvement of schools and pre-school institutions.

6.2 Main stakeholders

Systematic stakeholder involvement is important for the planning and establishment of the BR, but also for its later functioning.

¹ (Hirschelmann & Arabuli, Capacity development for biosphere reserve. Georgia. Main project results and implementation plan for biosphere reserve establishment, 2018)

Below Table 23 shows a list of stakeholders from different levels (national, local), who's involvement is important for planning as well for implementing phases.

Table 23: List of stakeholders

Governmental agencies at the national level
<ul style="list-style-type: none"> • Ministry of Environment Protection and Agriculture (MEPA) <ul style="list-style-type: none"> ○ Protected Areas Agency (PA) ○ National Forest Agency (NFA) ○ Environmental Information and Education Centre • Ministry of Economy and Sustainable Development (MESD) <ul style="list-style-type: none"> ○ National Tourism Agency (NTA) ○ National Agency of State Property (NASP) ○ The National Agency of Mines (NAM) • Ministry of Regional Development and Infrastructure (MRDI) • National Agency of Public Registry (NAPR) • Ministry of Internal Affairs (MIA) • Ministry of Foreign Affairs (MFA)
Governmental agencies at the local level
<ul style="list-style-type: none"> • Kakheti Regional Government • Local municipalities: <ul style="list-style-type: none"> ○ Dedoplistskaro ○ Akhmeta ○ Telavi • Administrations of protected areas
Local stakeholders
<ul style="list-style-type: none"> • Local communities (Dedoplistskaro, Kasrsitskali) / CSOs / CBOs • Farmers • Local cooperatives • Shepherd associations • Local business and guesthouse owners • Women's and Youth Associations • Local Development Group (LAG) • Schools and Kindergartens • Protected areas friends associations
International donor organizations
National NGOs and business actors
<ul style="list-style-type: none"> • National NGOs (e.g. REC Caucasus, NACRES, etc.) • Tourism service providers, travel companies, guides etc
Universities and Scientific/Research Organizations
Georgian Orthodox Church

Section 7. Research and Monitoring

Protected areas within Dedoplistskaro municipality and their surroundings have been studied on a large variety of subjects related to flora and fauna, pasture quality, climate change vulnerability, socio-economic characteristics and so on.

International and national experts have been doing research for international and national NGOs and donors, but also research institutions are active in the region. In the PAs research and monitoring is an important responsibility of the PA administrations also. The staff needs to do own monitoring and research for which capacities are rather limited but should also initiate research activities by other organisations and institutes and actively cooperate with universities.

Following research institutions have been involved research in the study region, also in several research projects in cooperation with universities from abroad¹ (such as Cambridge University, University of Greifswald etc.):

- Ilia State University, Tbilisi (also running a large field station in Dedoplistskaro)
- Ivane Javakhishvili Tbilisi State University
- Agricultural University of Georgia, Tbilisi
- Iakob Gogebashvili State University, Telavi

In terms of research and monitoring the area of Dedoplistskaro municipality is characterised with follow features:

- Most research activities within PAs are conducted by internationally funded projects (national and international experts), universities also get involved
- Research activities mainly focused on climate change vulnerability, degradation and sustainable resource management, human-wildlife conflict.
- International expertise is involved via international experts in projects, but there is also cooperation with international universities and research institutions
- Research and involvement of students could be increased, field station of Ilia State University (presented near village Kasristkali) could be used more widely.
- There is no central documentation of the research results. The results of the research activities are not aggregated in holistic data.
- Monitoring is done in PAs (wildlife and land use), especially outside of PAs there is lack of central monitoring of land and resource use (land tenure, livestock numbers, tourism etc.)

¹ (Hirschelmann, et al., 2016)

Section 8. Conflicts

The livestock migration which is one of the main agricultural activities within the municipality remains a major challenge in the transhumant sheep farming system. Among other problems, conflicts at different levels should also be emphasized. More specifically:

- Narrow migration route, especially due to privatization of lands in the migration corridor (e.g. occupation by land by fencing and tilling). This leads to the conflicts between shepherds and landowners.
- Many routes are only asphalt roads and sheep are hit by cars.
- Also conflicts with land users (especially crop farmers) and local population (e.g. overuse of village pastures) should be mentioned. Ways/transhumance routes are not marked, low awareness of the population, this also leads to the conflicts between locals and transhumance farmers.

Transhumant livestock farmers arrange the use of agricultural land for grazing with private land users. This is based largely on traditional arrangements. Still conflicts are prevalent as ownership arrangements change and fees are increasing year by year.

In addition to the above human-wildlife conflicts should be mentioned as well. Human-wildlife conflicts in light of increasing pressure on land and resources and the deteriorated ecological balance in the natural ecosystems, wild animals more often come into conflict with local people negatively impacting both the local people and biodiversity. The root causes of such conflicts often lie in the destruction of habitats and wild prey bases and the lack of household waste management, i.e. random landfills near settlements. Despite some surveys, human-wildlife conflicts in Georgia are not thoroughly understood (Hirschelmann, et al., 2016).

Section 9. Main measures / actions for sustainable development

9.1 Sustainable tourism

Following activities /measures can be proposed for sustainable tourism development.

- Promotion of sustainable use of cultural resources for the economic development of local population -
 - Establishment of information and consultation centers
 - Extension and improvement of community-based tourism services and infrastructure
 - Inclusion of local students and youth in the tourism popularization and education process.
 - Improvement of quality of various services in the tourism sector, including education and training of professional staff in different services
 - Strengthening and training of temporary tourism specialist in Dedoplistskaro municipality government who is working on municipality tourism strategy development.
- Improve tourism services
 - Increase knowledge and awareness of local hotel owners about different types of sustainable touristic services.
 - Improvement of public transport (opportunities and schedule)
 - Establish tourism information/ consultation center in Dedoplistskaro municipality
 - Develop different tourist services (e.g. souvenirs shops, fast food, cafe, restaurant and relevant services, etc.).
- Reduce environmental pollution and increase water quality -
 - The water quality needs to be improved by the renovation of filters.
 - Water supply to the population needs to be improved and increased.
 - Water quality monitoring system improvement is necessary for the whole municipality.
 - Differentiation of water supply for drinking and other uses
 - Maintenance of abundant and clean water resources
 - Limit for the use of water should be defined and fee for using water above the limit should be introduced
 - Waste management plan for PA and municipality
-

9.2 Sustainable agriculture

High potential to support sustainable development in the target region lies with sustainable livestock farming and community-based ecotourism (nature tourism in high mountains and semi-deserts/steppes, agrotourism in lowlands).

There are big challenges with regard to mobile livestock farming which are important challenges to tackle in the frame of BR development. Local brands and processing of products in the region exist but could be improved. A big challenge is the underdeveloped inter-sectorial cooperation.

Following activities /measures can be proposed for sustainable agriculture development.

- Promotion of a biodiversity friendly land use adapted to climate change.
 - Establishment of relevant regional and municipal organizations for better services for farmers.
 - Compensation mechanisms for crop loss (e.g. due to natural conditions)
- Sustainable use of meadows and grasslands -
 - Improvement current pasture management practices
 - Develop pasture management plan for municipality

- Formulation of recommendations and an action plan for pasture development and management, in consultation with the relevant stakeholders incl. authorities
- Improve legislative framework and law enforcement in definition of land tenure
- Assessment of de-facto use/management status and elaboration of a management plan for livestock migration corridors
- Improvement measures on existing livestock migration corridors and resting areas (infrastructure, cleaning, removal of illegal fences)
- Additional measures to improve livestock migration corridor/s
- Irrigations systems
 - Rehabilitation of irrigation system in Dedoplistskaro municipality, where possible. Especially in the surrounding territory of Taribana.
 - Sharing experience and knowledge from other (developed) countries regarding creation and management of irrigation system.
 - Setting up legislative framework which will regulate responsibilities between national and local state bodies and organizations involved in the management of irrigation system.
 - Introduction and establishment of modern technologies for irrigation (like drip irrigation etc.).
- Increase agriculture product quality.
 - Establish assessment and control system for agricultural products.
 - Improvement of the development, quality control and marketing of agricultural products (mainly from viniculture and beekeeping).
 - Assess local branding opportunity.
- Prohibition and control of unsustainable agricultural practices (e.g. burning fields)
 - Allocation of patrol crews (under municipality government) while high risk of fires based on environmental supervision services.
 - Introduce sustainable agricultural practices.
 - Promotion of a biodiversity-friendly land use adapted to climate change
 - Reinforcement of awareness raising campaign regarding sustainable agriculture, field burning harmful practices, etc.
- Reduce degradation of agricultural lands
 - Rehabilitation of windbreaks / create relevant legislative framework for the protection and development of windbreaks.
- Improve adaptation to climate change
 - Promotion of a biodiversity-friendly land use adapted to climate change

9.3 Crosscutting issues

Training is an important crosscutting issue in all thematic pillars of the BR.

Corresponding to the logistic support function of BRs, one of the main tasks of the BR in Kakheti should be development of science projects and programs as well as monitoring measures and systems in Dedoplistskaro municipalities. Two major directions are recommended for the improvement of these fields on a local level:

- Establishment of strategic partnerships with universities and other research institutions
- Research and monitoring of biodiversity and its threats outside of protected areas

Collaboration with local scientific and educational institutions gives the opportunity to fill the current gaps in research and monitoring in the region. Respective projects and programmes should be implemented and initiated during the implementation phase of BR. Priorities for the research are:

- Systematical and long-term research on state and developments of biodiversity and natural resources outside of protected areas (soil quality and erosion; plant, bird, and mammal diversity; poaching), involving universities and government.
- Comprehensive assessments regarding problems and needs in tourism
- Comprehensive tourism monitoring in the municipality
- Systematic research and monitoring of soil quality and condition of pastures
- Research and monitoring of biodiversity and its threats outside of protected areas

Public awareness is a crucial issue, people need to understand the idea and added value of a BR. Communicating the goal and value of the concept to stakeholders at national and local levels is a challenge. Therefore, it is recommendable that the initiative of BR establishment will have a well elaborated public awareness plan that will deliver information to all stakeholders about the BR, its difference to classical protected areas, and moreover, its added value for local communities. Based on the above, one of the main directions should be defined as a contribution to the goals for sustainable development and conservation in the region by Increase of environmental education activities with more involvement of schools and pre-school institutions. For these following actions are recommended:

- Formulation of an action plan for education and capacity development in the BR with relevant stakeholders
- Educational programmes for universities, colleges, schools and kindergartens incl. design of education materials. Activation and motivation of their directors and staff for activities in the field of environment and sustainable development
- Trainings for schoolteachers and other educators/child and youth workers.
- Educational and awareness raising activities for nature protection and environment in pre-school facilities.
- Educational and training events on different topics for local people, authorities, selected groups of stakeholders in tourism business, agriculture and forestry
- Setting up of a pool of well-informed and well-trained BR promoters
- Inclusion of additional professions and training programmes in the local college “Aisi” in the field wine-making and viniculture, food technology, tourism and ecology and nature protection. This is an issue of professional training in the field of conservation, tourism and agriculture and should be reflected in the action plans for these topics and the management plan in general.

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Annexes

Annex I – Licenses for use of the natural resources.

Table 24: Licenses for use of the natural resources. Dedoplistskaro municipality. Source: National Agency of Mines (NAM)

#	# of License	Location	Type of resource	License owner	Date of registration and license validity	The volume of resource (Min. Max)	Area (ha)
1	100020	Village Khornabuji	Limestone	“Artsivis Kheoba”	23.07.08 20 years	Total extraction 2,282,300 tons	20.13
2	1000326	Dedoplistskaro municipality	Limestone	Ltd. “Rustavis Foladi”	29.12.11 – 15.02.27	Total extraction 12,157,955 tons (min. 300,000 tons per year)	8.45
3	1000364	“Dedoplistskaro” limestone deposit. Near Dedoplistskaro	Limestone	Ltd. “Georgian Mega Cement Group”	12.01.12 – 11.06.31	Total extraction 2,324,000 tons	3.80
4	1000557	“Dedoplistskaro” limestone deposit. Near Dedoplistskaro	Limestone	Ltd. “Georgian Mega Cement Group”	20.04.12 – 17.03.32	Total extraction 1,193,100 tons	9.70
5	1000794	Near Dedoplistskaro	Limestone	Ltd. “Heidelberg Cement Georgia”	21.08.12 – 15.02.27	Total extraction 29,048,000 tons	26.70
6	1001352	“Dedoplistskaro” limestone deposit. Near Dedoplistskaro	Limestone	Ltd. “Terjola Career”	01.11.13 – 22.08.26	Total extraction 31,413,800 tons	31.26
7	1002256	“Dedoplistskaro” limestone deposit. Near Dedoplistskaro	Limestone	Ltd. “Kalciti”	13.01.15 – 14.01.35	Total extraction, 401,000 m ³	4.01
8	1003016	“Dedoplistskaro” limestone deposit. Near Village Khornabuji	Limestone	Ltd. “Logiko”	20.10.15 – 21.10.25	Total extraction 190,080 tons	0.48
9	1003934	“Dedoplistskaro” limestone deposit. Near Village Khornabuji	Limestone	Ltd. “Kalciti”	30.08.16 – 31.08.36	Total extraction, 350,000 m ³	5.00
10	1003981	“Dedoplistskaro” limestone deposit. Town Dedoplistskaro	Limestone	Ltd “Road construction company – Serpantini”	16.09.16 – 17.09.31	Total extraction 463,040 tons	1.53
11	1004395	“Dedoplistskaro” limestone deposit. Near Village Khornabuji	Limestone	Physical person Archil Gochashvili	06.04.17 – 07.04.27	Total extraction, 56,000 m ³	0.80
12	1004925	“Dedoplistskaro” limestone deposit. Dedoplistskaro municipality	Limestone	Ltd. “Terjola Career”	28.09.17 – 22.08.26	Total extraction 1,368,900 tons	2.66
13	1005028	“Dedoplistskaro”	Limestone	Physical	13.11.17 –	Total	1.55

		limestone deposit. Near Dedoplistskaro		person Giorgi Navrozashvili	30.09.32	extraction, 155,000 m ³	
14	10000675	“Dedoplistskaro” limestone deposit. Near Village Samreklo	Limestone	Ltd. “Infinited”	11.04.19 – 25.10.33	Total extraction, 178,074 m ³	1.51
15	10000850	“Dedoplistskaro” limestone deposit. Near Village Samreklo	Limestone	Physical person Vefxvia Albutashvili	11.07.19 – 12.07.29	Total extraction, 120,650 m ³	1.21
16	10000415	“Pirosmani” sand deposit. Near village Pirosmani	Sand	Ltd. “Didgori”	13.12.18 – 14.12.21	Total extraction, 33,100 m ³	0.66
17	1000362	“Gamarjveba” clay deposit. Village Gamarjveba	Clay	Ltd. “Georgian Mega Cement Group”	12.01.12 – 13.10.31	Total extraction 188,947 tons	3.05
18	1000475	“Gamarjveba” clay deposit. Village Gamarjveba	Clay	Ltd. “Georgian Mega Cement Group”	23.03.12 – 25.02.32	Total extraction 504,450 tons	4.75
19	1000297	Near town Dedoplistskaro	Fresh water	Physical person Gocha Latipashvili	16.12.11 – 14.02.36	1.3 m ³ /day	0.07
20	1002863	Near Village Khornabuji	Fresh water	Ltd “Ari”	19.08.15 – 20.08.40	3,650 m ³ /year	0.07
21	1003106	Near village Gamarjveba	Fresh water	Ltd. “Trance Commerce”	19.11.15 – 20.11.40	1,095 m ³ /year	0.07
22	1005217	Near village Zemo Kedi	Fresh water	Ltd. “Mari”	31.01.18 – 01.02.43	18,000 m ³ /year	0.07
23	10000165	Near village Zemo Kedi	Fresh water	Ltd. “Tengo”	20.08.18 – 21.08.43	20,000 m ³ /year	0.07

Annex II – Cultural Heritage Sites

See attached pdf. File – “Annex_II_Cultural Heritage Sites”

Annex III – Business Register

See attached xlsx. Files:

- “Annex_III_1_Business register - list of enterprises.xlsx”
- “Annex_III_2_Business Register - Number of entities.xlsx”

Annex IV – Demography

Table 25: Population by Administrative-Territorial Units, Gender and Age Groups. Dedoplistskaro Municipality. Source: GeoStat (Census 2014).

Community / Village	Both				Men				Women			
	Total	0-17	18-64	65 +	Total	0-17	18-64	65 +	Total	0-17	18-64	65 +
Dedoplistskaro municipality	21,221	4,381	12,370	4,470	10,183	2,285	6,242	1,656	11,038	2,096	6,128	2,814
Town Dedoplistskaro	5,940	1,249	3,463	1,228	2,746	648	1,650	448	3,194	601	1,813	780
Arboshiki Community	1,138	181	600	357	536	103	295	138	602	78	305	219
Arboshiki	1,138	181	600	357	536	103	295	138	602	78	305	219
Arkhiloskalo Community	980	202	546	232	490	110	305	75	490	92	241	157
Arkhiloskalo	980	202	546	232	490	110	305	75	490	92	241	157
Gamarjveba Community	1,010	207	567	236	481	112	282	87	529	95	285	149
Gamarjveba	1,010	207	567	236	481	112	282	87	529	95	285	149
Zemo Machkhaani Community	1,826	272	1,023	531	885	141	529	215	941	131	494	316
Zemo Machkhaani	1,826	272	1,023	531	885	141	529	215	941	131	494	316
Zemo Kedi Community	1,826	360	980	486	892	182	538	172	934	178	442	314
Zemo kedi	1,826	360	980	486	892	182	538	172	934	178	442	314
Mirzaani Community	433	88	243	102	198	41	121	36	235	47	122	66
Mirzaani	433	88	243	102	198	41	121	36	235	47	122	66
Ozaani Community	913	182	502	229	445	94	256	95	468	88	246	134
Ozaani	833	170	454	209	403	89	225	89	430	81	229	120
Tavtskaro	80	12	48	20	42	... ¹	31	...	38	...	17	14
Sabatlo Community	391	96	253	42	196	50	127	19	195	46	126	23
Sabatlo	391	96	253	42	196	50	127	19	195	46	126	23
Samtatskaro Community	1,037	265	699	73	530	144	356	30	507	121	343	43
Samtatskaro	1,037	265	699	73	530	144	356	30	507	121	343	43
Samreklo Community	1,786	390	1,061	335	869	202	540	127	917	188	521	208
Samreklo	1,786	390	1,061	335	869	202	540	127	917	188	521	208
Pirosmani Community	569	146	406	17	295	73	218	...	274	73	188	13
Pirosmani	569	146	406	17	295	73	218	...	274	73	188	13
Kvemo Kedi Community	1,153	221	684	248	584	127	382	75	569	94	302	173
Kvemo Kedi	1,153	221	684	248	584	127	382	75	569	94	302	173
Khornabuji Community	2,219	522	1,343	354	1,036	258	643	135	1,183	264	700	219
Khornabuji	2,095	476	1,276	343	978	234	612	132	1,117	242	664	211
Choeti	124	46	67	11	58	24	31	...	66	22	36	...

¹ the number of cases does not exceed 10

Table 26: Age groups of population by urban-rural settlements and gender. Dedoplistskaro Municipality. Source: GeoStat (Census 2014).

Age groups	Total			Urban Settlements			Rural Settlements		
	Both	Men	Women	Both	Men	Women	Both	Men	Women
Total population	21,221	10,183	11,038	5,940	2,746	3,194	15,281	7,437	7,844
0-4	1,263	655	608	350	181	169	913	474	439
5-9	1,162	626	536	354	192	162	808	434	374
10-14	1,159	598	561	326	156	170	833	442	391
15-19	1,108	577	531	307	160	147	801	417	384
20-24	1,077	596	481	280	152	128	797	444	353
25-29	1,198	648	550	333	168	165	865	480	385
30-34	1,179	613	566	336	171	165	843	442	401
35-39	1,221	636	585	362	185	177	859	451	408
40-44	1,300	625	675	370	161	209	930	464	466
45-49	1,414	742	672	394	186	208	1,020	556	464
50-54	1,708	850	858	450	229	221	1,258	621	637
55-59	1,625	756	869	449	185	264	1,176	571	605
60-64	1,337	605	732	401	172	229	936	433	503
65-69	1,165	477	688	353	132	221	812	345	467
70-74	933	348	585	282	112	170	651	236	415
75-79	1,161	409	752	299	99	200	862	310	552
80-84	712	258	454	162	67	95	550	191	359
85+	499	164	335	132	38	94	367	126	241