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Depopulation of the Ethnic Diverse Mountain Villages in the Northwestern Part of Azerbaijan and the Development of a Sustainable Rural Development Model

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Abstract. The article investigates the primary causes of the depopulation of ethnically diverse mountain villages located in the northwestern part of Azerbaijan and provides a sustainable rural development model to alleviate this process. The primary purpose of the research is to determine the mountain villages which are composed of ethnic minorities and at the brink of extinction or endangered and find the fundamental causes behind this process. It was revealed that the diversity of ethnic composition, the level of economic development, natural-geographical and other factors have played an exceptional role in population mobility in the mountain villages. Particularly, the intensification of population mobility in recent years has further accelerated the process of polarisation in the region's settlement system, which has led some ethnically diverse villages to be almost abandoned and some to have slow population growth. Although the survey database is based on official statistics, a social survey was conducted in the eligible settlements to become closely acquainted with the local situation. As a consequence of the analysis of official data and survey materials, it became evident that the basic causes of the migration of local residents are related to socioeconomic and natural-geographical factors. Undoubtedly, a continuation of this tendency in the following years is likely to culminate in the complete depopulation of several ethnically diverse mountain villages and the loss of ethnic diversity in the area. Therefore, in order to revitalize rural settlements in the mountain areas, the sustainable rural development model was developed.

Keywords: Azerbaijan, depopulation, ethnic minorities, mountain villages, rural development model, rural population

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Депопуляция этнически разнородных горных сел в северо-западной части Азербайджана и разработка модели устойчивого развития сельских районов

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Аннотация. В статье исследуются первопричины депопуляции этнически разнородных горных сел, расположенных в северо-западной части Азербайджана, а также предлагается модель устойчивого развития сельских районов для ослабления последствий этого процесса. Основной целью исследования является установление горных деревень, состоящих из этнических меньшинств и находящихся на грани исчезновения или под угрозой исчезновения, и раскрытие основных причин

этого процесса. Выявлено, что пестрота этнического состава, уровень экономического развития, природно-географические и другие факторы сыграли исключительную роль в мобильности населения в горных аулах. В частности, усиление мобильности населения в последние годы еще больше ускорило процесс поляризации в системе расселения региона. Это привело к тому, что некоторые этнически разнородные села оказались практически заброшены, а в некоторых наблюдался медленный прирост населения. Хотя база данных обследования основана на официальной статистике, в населенных пунктах, отвечающих критериям, был проведен социологический опрос, чтобы лучше ознакомиться с местной ситуацией. В результате анализа официальных данных и материалов опроса стало очевидным, что основные причины миграции местных жителей связаны с социально-экономическими и природно-географическими факторами. Несомненно, продолжение этой тенденции в последующие годы, вероятно, приведет к полному запустению некоторых этнически разнородных горных деревень и утрате этнического разнообразия в этом районе. Поэтому для возрождения сельских поселений в горных районах была разработана модель устойчивого развития сельских районов.

Ключевые слова: Азербайджан, депопуляция, национальные меньшинства, горные села, модель развития села, сельское население

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Introduction

The Republic of Azerbaijan is among the multinational countries of the world. The territories covering the northwestern region of the republic are also distinguished by their multiethnicity. Thus, the region is settled by the Udi people, Avars, Tsakhurs, Inghilois, Akhvakhs, Rutuls, and other members of the ethnic and national minorities, such as Kurds, Tatars, Russian, Turks, and others. Among these ethnic minorities whose names are mentioned above, almost all of the Udi people, Tsakhurs, and Avars populate the northwestern regions of the republic. The majority of the Inghilois fall into this region's share (76.1 %) as well [Huseynova, 2021a].

The Republic of Azerbaijan is factored in as a mountainous country due to the fact that about 58.0 % of its territory is covered by relief units located above 200 metres [Museyibov, 1998]. The region, named the Shaki-Zagatala economic region and encompassing the northwestern part of the country, stretches along the southern exposition of the Greater Caucasus Mountains and covers 10.2 % of the country's territory. More than 80 % of the region's territory is covered by low, medium, and high mountainous areas [Distribution of population..., 2016].

The Shaki-Zagatala economic region has a population of 630.4 thousand people and an area of 8.84 thousand km² [Demographic indicators of Azerbaijan, 2021]. The economic region consists of 6 administrative districts, including Balakan, Gakh, Gabala, Oghuz, Shaki, and Zagatala, 7 small towns, and 336 villages (Fig. 1). In the year 2009 (the indicators were given for the year 2009 since the last census materials were not ready), the population of the region was 566.0 thousand people, of which 105.2 thousand people or 18.6 % were accounted for by the minority ethnic groups. 92.2 thousand people or 87.6 % of the minority ethnic groups dwelling in the area settled in rural settlements, and 13.0 thousand people or 12.4 % in urban settlements (2009). It can be concluded that the main settlements of minority ethnic groups are rural areas.

The Avars settle primarily in the Balakan and Zagatala districts of the region, the Tsakhurs in the Gakh and Zagatala districts, the Inghilois in the Gakh, Zagatala and partly in the Balakan district, the Udi people in the Gabala and partly in the Oghuz district, and the Lezgins in all administrative districts. However, the number of Lezgins is comparatively higher in Gabala, Shaki, and Oghuz districts [Huseynova, 2021b].

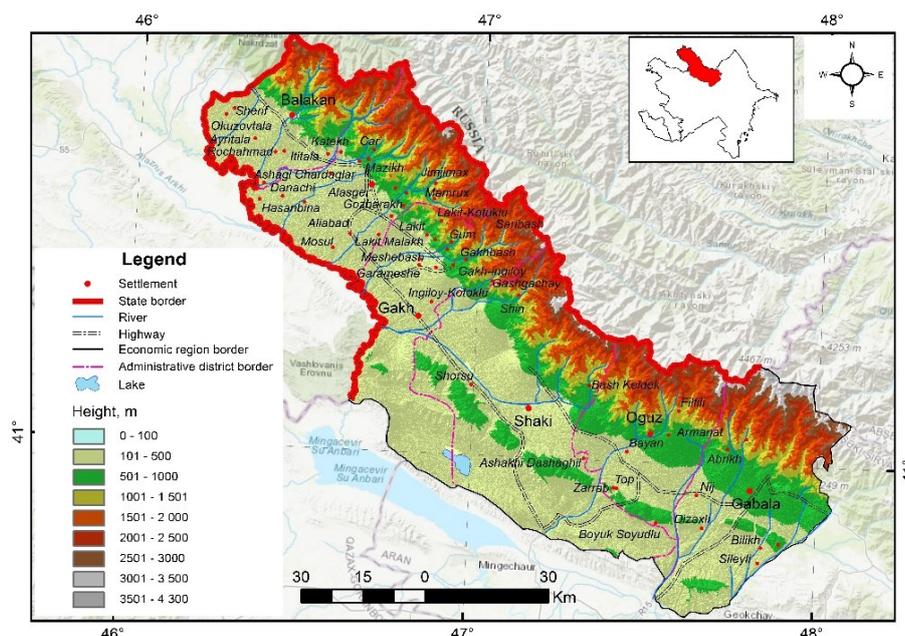


Fig. 1. Survey map of the study region
 Рис. 1. Обзорная карта изучаемого региона

The world's mountainous regions are delicate to a plethora of issues, including troublesome access, economic and political marginalisation, external migration, environmental sensitivity, and diversity of livelihoods [Price et al., 2004; Khan, Somucu, 2013]. Because of their smaller populations and inadequacy of urban economics, these regions can be disadvantageous areas in terms of their economic development [Perlik, Membretti, 2018]. Moreover, as opposed to the low-lying areas, these areas have problems with the multitude of social interactions that are one of the substantial indicators of regional improvement [Storper, 1995].

As a consequence of this, in several developing and underdeveloped countries, even in some developed countries leaving a place of residence takes its beginning from the mountainous areas.

Rural communities in many mountainous areas around the world consider leaving their residences as an essential expedient to vary their economic activities to make better living conditions [Schoch et al., 2010].

Problems of depopulation in rural areas have affected many countries and regions in the post-Soviet period [Laoshvili et al., 2020; Chugunova, Yakovenko, 2022]. Today, the depopulation of mountain villages has become a major topic of discussion in many countries around the world. Depopulation is a process that is more common in some countries, especially in remote and rural areas.

Conventionally, in order to change their living quality, reduce their direct dependency on natural resources, and adapt to environmental, societal, economic, and political pressure, people residing in mountain areas have migrated [Tacoli, 2011]. To build a better life for themselves, young people who leave these areas for education or work are unwilling to return to these areas. In such areas, natural increase slows or takes a negative tendency because of the ageing of the population. This leads to the process of depopulation. That is, low births pave the way for the low natural increase. This is the essential demographic driver of depopulation. In the coming days, this continuous depopulation is likely to cause the risk of village extinction because these phenomena are associated with each other [Vaishar et al., 2021].

Depopulation is a process that occurs under the influence of several factors. That is, environmental, social, economic and in some cases, political factors play a significant role in this process.

Over the last 20 years, numerous pieces of research have been conducted on the depopulation of settlements in mountainous areas and the migration of people from these areas. Some researchers even consider this situation as a positive tendency and note that the outflow of people from mountainous areas plays an important role in the sustainability and productivity of sensitive mountain ecosystems, reducing environmental pressures, and restoring ecological recovery and biodiversity [Grau, Aide, 2007]. However, on the other hand, migration of the population to other parts of the region/country or abroad raises another problem, leading to a reduction in human capital and labour resources [Serageldin, 1996].

In addition to this, rural areas are a source of labour resources also used in urban areas, a refuge for endangered plant and animal species and natural landscapes and areas in need of protection. Rural settlements are an important element of national and regional cultural heritage. This is the reason why sustainable rural development is a complex set of significant issues for a country's whole society [Adamowicz, 2020].

In areas differentiating its ethnic diversity, the depopulation issue in turn may culminate in the complete disappearance of ethnic diversity or any minority ethnic group. At the same time, regardless of the country's relief, necessary measures should be taken to maintain a local population in the mountainous areas, as well as in the plains, in order to achieve balanced development between the regions and to establish a unified settlement system.

The essential part of the rural population living in rural areas of Azerbaijan engages in forestry, agriculture, and agriculture-related sectors [Eminov, 2005]. Therefore, the availability of arable land, water resources and irrigation networks, social infrastructure, transport, and other facilities is taken into consideration as important factors to improve the welfare of the population in the villages of the Republic of Azerbaijan. In short, rural societies encounter numerous socioeconomic and environmental challenges in the context of climate change, poverty, geographical isolation, and other factors [Mihai, Iatu, 2020].

In order to conduct the research, the research paper focused on three goals:

1. Determination of the ethnic diverse villages where the population declines or increases at a slower pace.
2. Identification and categorisation of factors contributing to the depopulation and weak population growth of these villages.
3. Development of a sustainable rural development model using various practices to prevent depopulation and repopulation of this area.

Objects and methods of research

The research database is based on 3 sources:

1. A basic map of the study region;
2. Literature and fund materials;
3. Field investigation.

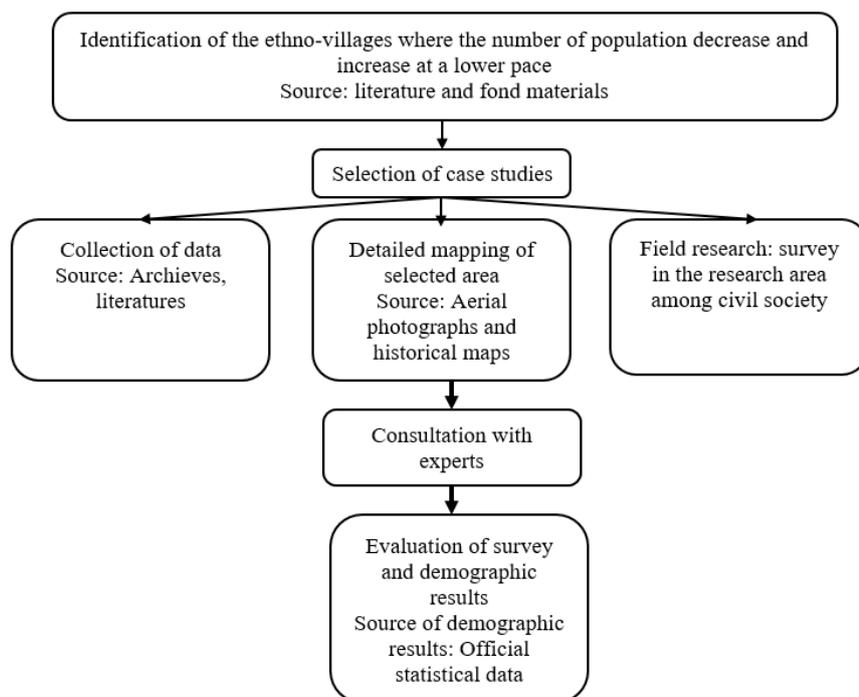


Fig. 2. Research procedure
Рис. 2. Процедура исследования



The primary source is a 1: 25000 scale map of the economic region prepared at the Institute of Geography of ANAS. The second source is the scientific work and fund materials of researchers who have conducted research in this field in Azerbaijan and around the world. The third source is to organise a meeting with the residents and conduct a survey in September-October 2021 with the help of village officials in pre-selected rural settlements (Fig. 2).

With the help of executive officers and officials of the villages, a 14-day household survey was conducted in September and October of 2021, with the survey in March and September 2022 as a supplementary survey. In order to obtain general information about the local population in the survey materials, along with the respondent's area of residence, gender, age, ethnicity, marital status, education, employment, monthly income and other types of questions, in order to study the depopulation of villages and to study the opinion of the local residents to discuss these challenges were reflected in the survey materials.

The survey was conducted in 16 mountain villages populated compactly by ethnic minorities. The survey materials were distributed to 400 people and each questionnaire was answered. 56 % of the respondents were women and 44 % were men (Table 1).

Table 1
Таблица 1

Demographic features of the respondents
Демографические особенности респондентов

Demographic features		Number of respondents*	Percentage	Total
Sex	Female	220	56.0	400
	Male	180	44.0	
Age bracket	15–24	22	5.5	400
	25–34	126	31.5	
	35–44	94	23.5	
	45–54	86	21.5	
	55–64	22	5.5	
	65 and over	50	12.5	
Occupation	Student	22	5.5	400
	Housewife	46	11.5	
	Agricultural sector	216	54.0	
	Industry sector	–	–	
	Government sector	52	13.0	
	Private sector	–	–	
	Retired	50	12.5	
Jobless	14	3.5		
Ethnicity	Akhvakh	60	15.0	400
	Avar	40	10.0	
	Inghiloi	100	25.0	
	Lezgin	60	15.0	
	Rutul	40	10.0	
	Tsakhur	100	25.0	

* The questionnaires were distributed randomly without considering the gender, occupation, level of education, and other indicators of the residents.

A sustainable rural development model was developed for the repopulation of the research area, based on both local and international research. In order to develop the model, the resources of the research area were studied, the opinions of the local population were collected and analysed, as well as UN reports on rural development were used.

Result and discussion

Dynamics of the minority ethnic groups. With respect to the dynamics of the number of ethnic groups living in rural areas of the region, it can be seen that there was a significant decrease in their number (The dynamics of the population were provided by the years 1999 and 2009 since the official statistical materials for 2019 are not ready) (Fig. 3). This decline was most pronounced in the number of Udi people. Formerly, Udi people dwelled in the Nij village of Gabala district, and this decline in their number is not because of the population crash of the village, but because of the change of status of the settlement town in 2005 [Huseynova, 2021b].

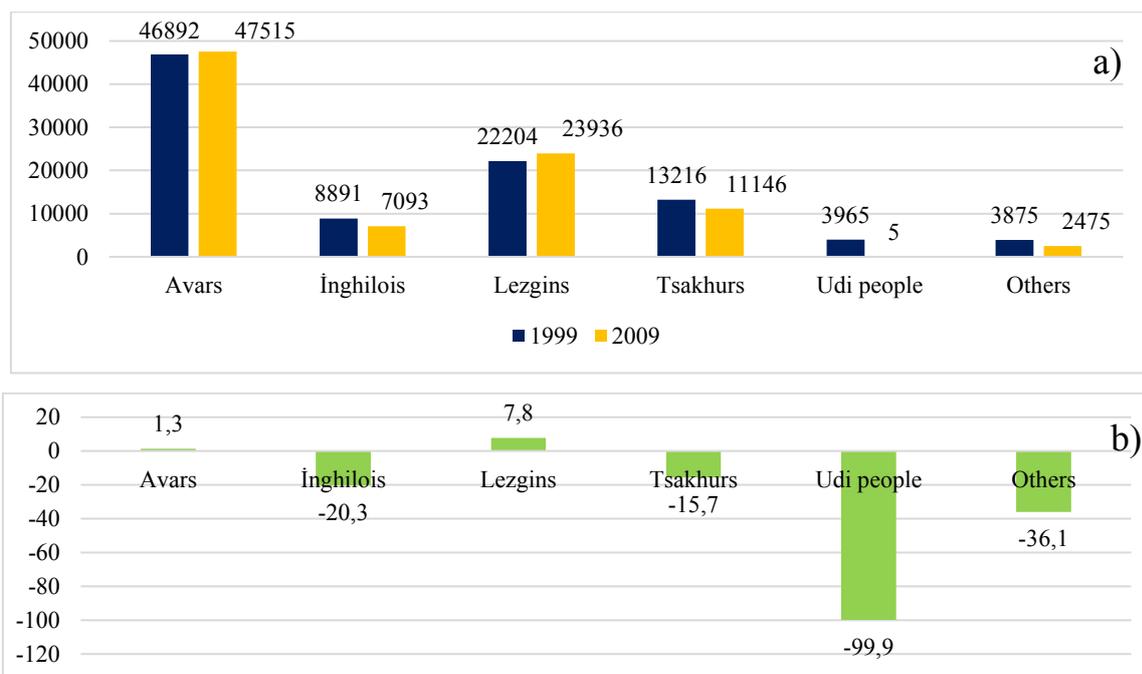


Fig. 3. a) Dynamics of the ethnic minorities in the rural settlements in 1999–2009;
b) Growth dynamics of minority ethnic groups in 1999–2009

Рис. 3. а) Динамика численности национальных меньшинств в сельских поселениях в 1999–2009 гг.;
б) Динамика роста этнических меньшинств в 1999–2009 гг.

However, there was a downward tendency in the number of Udi people. According to the local residents, this decrease is due to the internal and external migration of the population. Regarding external migration, the Udi people (both men and women) migrate to the Russian Federation for both education and employment-related purposes. Similarly, the number of Inghilois and Tsakhurs populating rural places declined significantly. The decline in the number of Inghilois in rural areas is due to the fact that both men and women migrate to Georgia to study and business purposes, and some of the women prefer migrating to Germany to work there (especially engaging in babysitting) [Huseynova, 2022]. Turning to the number of the Avars and Lezgins, in spite of migrating to Russia, their number increased in rural areas because of the comparatively higher natural increase. Regarding internal migration, undoubtedly, most of the migrants give preference to the Baku economic region which is by far the most developed region of Azerbaijan. Emigration of the population in the region has manifested itself not only in the villages located in the plains and foothills but also in the mountain villages. The relatively unfavourable conditions for living and working in mountain villages have made this situation even more intense.

Ethnic diverse mountain villages with declining populations and weak growth rates. Totally, there are 94 rural settlements in the study area located at an altitude of more than 500 metres and 42 of them are ethno-diverse villages. The villages of the Balakan district where almost 20 % of the population is constituted by ethnic minorities were not investigated because there are not any villages located at an altitude of more than 500 metres. In each of the Gakh, Oghuz, Shaki, and Zagatala districts, there are 12 (including 9 ethno-diverse villages), 13 (including 6 ethno-

diverse villages), 23 (including 6 ethno-diverse villages) and 16 (including 15 ethno-diverse villages) rural settlements belonging to this group, respectively. The largest number of rural settlements in this group is in the Gabala district (30 villages (including 6 ethno-diverse villages)).

According to the result of the investigation, 11 ethno-diverse mountain villages with declining populations were recorded in the study region [Huseynova, 2021c]. Of these villages, 5 villages were built at an altitude of 1000 meters, and 6 at an altitude of between 500 and 1000 metres. Only 2 of the villages have a large demographic potential whereas the population of 3 villages is less than 100 people (Table 2, Fig. 4).

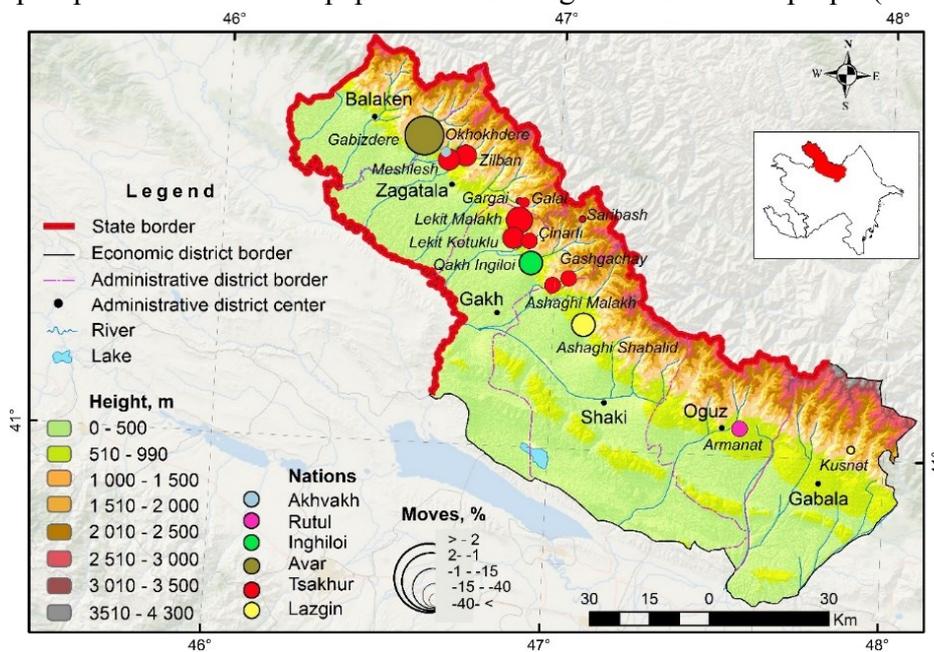


Fig. 4. Map-scheme of the ethno-rural mountain villages studied
Рис. 4. Карта-схема изученных этносельских горных поселений

Table 2
Таблица 2

Villages with a declining population
Деревни с убывающим населением

№	Name of villages	Altitudes (metre)	Ethnic composition	Population*		Decline rate in 1999-2009 (with %)
				1999	2009	
1	Gakh Ingiloy	650	Inghiloi	3294	2949	-10.5
2	Gashgachay	1020	Tsakhur	1083	1052	-2.9
3	Ashaghi Malakh	690	Tsakhur	310	301	-2.9
4	Chinarli	800	Tsakhur	388	384	-1.0
5	Saribash	1600	Tsakhur	218	132	-39.4
6	Kusnet	1120	Lezgin	71	44	-38.0
7	Armanat	725	Rutul	665	570	-14.3
8	Ashaghi Shabalid	525	Lezgin	711	672	-5.5
9	Galal	1030	Tsakhur	31	16	-48.4
10	Gargay	1150	Tsakhur	65	55	-15.4
11	Akhakh dara	650	Akhvakh	570	307	-46.1
The villages with a slower increase rate						
12	Lakit Malakh	520	Tsakhur	106	108	1.9
13	Lakit Kotuklu	1000	Tsakhur	251	260	3.6
14	Zilban	600	Tsakhur	583	586	0.5
15	Gabizdara	530	Avar	229	245	7.0
16	Mishlesh	850	Tsakhur	134	137	2.2

One of the villages with the highest rate of decline among the rural population is Saribash village in the Gakh district, where the population is composed of Tsakhurs. Such a rapid fall in the population of Saribash village is due to the fact that the village is located high altitude and distance from the district centre and other settlements. The village is the highest settlement in the region. Generally, Saribash village is considered one of the most remote villages in the Republic of Azerbaijan (Fig. 5).



Fig. 5. A bird's eye view of the Saribash village (with microdrone)
Рис. 5. Село Сарибаш с высоты птичьего полета (с микродрона)

In the 1960s, with the inclusion of the village with more than 1000 people in the group of “unpromising villages”, part of the population was relocated to the village of Jalayir, located at an altitude of 215 meters above sea level and had a convenient condition for the development of agriculture and creating “soyuznaya xozyaystva” (union economy) in the USSR, including in the Soviet Socialist Republic of Azerbaijan. As a matter of fact, this process commenced in the 1950s and gained momentum in the 1960s. In previous years, the condition of the village's social infrastructure was relatively convenient, as the village had a field hospital, a school, a library, and a house of culture. However, the village is currently in danger of extinction due to its remoteness, insufficient social infrastructure, and unemployment-caused challenges.

Another village with a rapidly declining population is the Kusnet village of the Gabala district, inhabited by Lezgins. The village was built by Lezgins who moved from the namesake village of the Guba district. The population of village, which used to have a large population, was mainly engaged in pottery and other traditional occupations. At present moment, the population of the village is represented by the older generation, which was once engaged in this activity. Thus, there is no natural increase in the village because there are no representatives of the younger generation. As a result of the lack of natality and high mortality in the village, which is composed of members of the older generation, the natural increase has taken a negative figure.

The Galal and Gargay villages of the Zagatala district, where the population is composed of Tsakhurs and in danger of extinction, are also considered to be of these types of villages.

One of the villages with a highly declining population is the village of Akhkhakh dara, inhabited by the Akhvaks, who live compactly in only two places in the world (the Akhvakh region of Dagestan and Zagatala district of Azerbaijan). The number of Akhvaks settling in Zagatala city, Jar village of Zagatala district, and Gabagchol town of the Balakan district is comparatively lower. Akhkhakh dara village is almost surrounded by Avar villages. The arrival of Akhaks living in this village for more than 2 centuries was due to the inadequacy of arable land in Dagestan. After



arriving in Azerbaijan, the Akhvakhs, who were mainly engaged in sheep breeding, began to engage in vegetable growing as well. The main occupations of the villagers are gardening (orchards are mainly made of walnuts, chestnuts, and hazelnuts), beekeeping, tobacco growing, and cattle breeding. From 1999 to 2009, the population of the village decreased by more than 46 %. The underlying cause for the decrease in the village was the migration of young people from the village, and this situation in turn has resulted in a decrease in the natural increase rate.

Another village with a declining population is the Armanat village of the Oghuz district, which is populated by the Rutuls (one of the 5 ethnic groups of the Lezgins). Rutuls, densely populated in Rutul, Akhti, Babayurd, and Kizliyar districts of Dagestan, settle mainly in Dashuz, Shorsu, Shin villages of Shaki district and in Armanat village of Oghuz district. Most of the Rutuls living in Azerbaijan migrated from the villages of Rutul and Borj areas of the Dagestan. The Rutuls, a nomadic people, migrated to the mountains in summer and to the lowlands and plains in the winter. The reason for the nomadic life of the Rutuls was that they were mainly engaged in cattle breeding. The village, located 570 meters from the southern foothills of the Caucasus Mountains, is being abandoned due to unsatisfactory social infrastructure. An insufficient level of road infrastructure weakens the connection of the population with the district centre.

Among the villages with a declining population, the Gakh Ingiloy village can be indicated. The local population in the village where the population is constituted of the Christian Inghilois who call themselves Georgian. The Inghilois are believed to be descendants of the Gel tribes, one of 26 ethnic groups in Caucasian Albania [Hajiali, 2007]. Migration processes among young people in the village of Gakh Ingiloy are progressing rapidly. Young people mainly go to the Republic of Georgia to study and for work-related purposes. As a result of the reluctance of those who leave to return to rural areas, the number of young people is declining.

The Gashgachay village is also included in the villages with a declining population. Non-use of the natural and historical tourism potential of Gashgachay village, which has a rich nature, ancient history, and great demographic potential, the inefficacy of social infrastructure facilities, including a medical centre, is one of the reasons for the population to leave the village. Owing to the inadequacy of business opportunities and difficult living conditions, young people migrate to Baku and other areas whenever possible. Therefore, it is possible to come across many empty and ownerless houses in the village.

In the villages of Ashaghi Shabalid, Ashaghi Malakh, and Chinarli, where the population is declining at a relatively slow pace, the main reason for the population to leave is to find more profitable employment opportunities.

There are five ethnic rural mountain settlements with a slower pace of population increase. These villages include Lakit Malakh, Lakit Kotuklu villages of the Gakh district, Mishlesh, Zilban, and Gabizdere villages of the Zagatala district (See Table 2, Fig. 4). Generally speaking, most of the villages with a declining population dwelled by the Tsakhurs. This situation is not because the emigration process is relatively faster among the Tsakhurs, but because there are several Tsakhur villages located at an altitude of over 500 metres.

The difference between rural and urban areas is directly proportional to the flow of population from rural to urban areas [Ma et al., 2019]. In other words, development in rural areas, especially in mountainous areas, is very slow compared to urban areas in Azerbaijan. This accelerates the flow of people living in rural areas to the city. However, it is interesting that the influx to the villages accelerates during the summer months, and this increase is due to the urban population coming to the countryside for recreation. Even in some mountain villages, part of the houses is bought by the urban population and used as garden houses or rest houses. However, they are not permanent residents of the area but are registered residents of the city. It is a fact that rural places are more commonly becoming an asset used by urban residents, entrepreneurs, and tourists, this is the reason why these settlements turn into a public good [Mieczysław, Ligaj, 2018].

The reasons for population migration and depopulation of rural settlements in mountain villages are different, and this process occurs primarily under the influence of natural-geographical, social, economic, and political factors [Mahdi et al., 2014; Hidayat et al., 2022]. These days, the

migration of the population proceeds to adapt to environmental, societal, economic, and political pressure [Bachmann et al., 2019]. Generally speaking, a large spectrum of challenges, such as natural disasters, socio-economic challenges, and other issues must be managed by the rural communities since conducting such dangers invigorate the flexibility of the rural communities [Freshwater, 2015].

The factors affecting the depopulation and weak increase rate can be divided into 4 groups: natural-geographical, social, economic, and political (Table 3).

Table 3
Таблица 3The impact of factors affecting population settlement
Воздействие факторов, влияющих на расселение населения

Factors*	Low	Moderate	High	Shares (%)
Natural-geographical		+		20.0
Social			+	35.0
Economical			+	45.0
Political	+			0

*The impact of factors was calculated based on the results of the questionnaire materials.

Natural-geographical factors. From the geographical point of view, the role of natural and geographical factors in the settlement system of the region, which covers the southern slope of the Greater Caucasus Mountains, has been enormous. Areas suitable for population settlement, especially for rural settlements, cover the Ganikh-Ayrichay valley in the economic region covering part of the Zagatala-Lahij region of the Greater Caucasus province and the Ganikh-Ayrichay region of the Kura intermountain depression [Geography of the Republic of Azerbaijan, Physical ..., 2014]. However, all the villages involved in the study are mountainous, in other words, part of the Zagatala-Lahij region. The region with a high slope is characterised by a subtropical climate type in the foothills, a temperate-warm climate type with equal distribution of precipitation in the middle and lower parts of the highlands, and the same amount of precipitation in all seasons, and a mountain-tundra climate type in the highlands. The average January temperature in the region is $-3\text{ }^{\circ}\text{C}$ – $(-7\text{ }^{\circ}\text{C})$ whereas the average July temperature is $15^{\circ}\text{--}20^{\circ}\text{C}$. The average annual rainfall is 600–900 mm [Geography of the Republic of Azerbaijan, Physical ..., 2014].

Nevertheless, in spite of the favourable climate condition, in recent years, due to global climate change, the amount of precipitation, especially in the mountains, has decreased and resulted in harsh drought in the region [Huseynov, 2022]. Undoubtedly, global warming is more pronounced in mountain villages. Thus, due to reduced rainfall, the cultivation of rainfed crops cannot be developed, and crop yields are decreasing gradually. This situation has created serious problems for residents who receive the bulk of their income from nut products, vegetable-growing, horticulture, potato, tobacco, wheat-growing, and other crops. Many rivers dry up during the warmer months of the year owing to reduced rainfall in the region, where the essential source of rivers is rain and snow.

Decreased rainfall will also cause problems for villagers engaged in animal husbandry to find a “winter place”. According to locals, sometimes, “local conflicts” between villages arise over winter pastures and natural pastures. In this regard, in recent years, the process of “environmental migration” in the mountain villages of the region has accelerated, and as a result, the number of “climate migrants” among those leaving has increased.

Environmental issues, climate change, and related-natural phenomena mostly affect small-scale farmers. Owing to the weak support for climate change adaptation risk insurance and the abundance of such small-scale farmers in mountainous areas, dwellers often encounter such problems and are obliged to migrate ¹ [Milan et al, 2016].

¹ Swiss Agency for Development and Cooperation (SDC). 2016. Climate change and environment: Migration. Nexus Brief No. 1. Electronic resource. [https://www.shareweb.ch/site/ClimateChangeandEnvironment/Documents/Nexus%20brief%20Nr.1%20\(July%202016\).pdf](https://www.shareweb.ch/site/ClimateChangeandEnvironment/Documents/Nexus%20brief%20Nr.1%20(July%202016).pdf). (accessed: 18.12.2022)



Economic factors. One of the factors contributing to the depopulation among residents is economic factors. Generally, the economic strength of mountain villages located in the study area is measured by the volume of their agricultural production and the potential of tourism, especially ecotourism and ethnic tourism. The essential occupations of the population in the mountain villages of the region are based on agricultural activities - large and small cattle breeding, horticulture, vegetable growing, and others. In recent years, the demand for livestock products in rural areas has decreased. As a matter of fact, in the past, livestock products in rural areas were consumed by the local population and dispatched to other areas, however, today, people prefer to purchase fabricated products. The fabricated or prefabricated meat and dairy products are produced by medium and large industrial enterprises owned by great entrepreneurs. Similarly, the demand for non-food-based livestock products, such as wool, has declined sharply. At the same time, due to the lack of pastures in the area and the high cost of feed for livestock, problems with the sale of livestock products, especially due to the fact that livestock is not considered a profitable sector, residents are not willing to engage in this field.

In mountain villages, rural households have a problem with cultivating and selling their products to local markets, or these products are purchased at low prices [Wegren, 2016]. The aforementioned situation in turn induces rapid polarisation between plain and mountain villages and polarisation becomes common in rural places [Sikorski et al., 2020]. Thus, the availability of more fertile lands and irrigation systems in the plains and the cultivation of relatively labour-intensive agricultural products lead to the concentration of the population in this area. On the contrary, in mountain villages, depopulation has gained momentum because of this situation.

Social factors. Not paying required attention to the mountain villages, especially remote villages has brought about the emergence of social problems. After the resettlement of the rural population, some enterprises, schools, field hospitals, shops, and other facilities cease their activities due to reduced demand. For this reason, in the coming years, the younger generation and their children are unlikely to return to these villages due to the lack of social infrastructure in the village. Poor living conditions in mountain villages also hinder the teaching process of both teachers and students. That is, they sometimes go to neighbouring villages for training.

Political factors. The influence of political factors on the evacuation of mountain villages was most pronounced in the 1960s, after the collapse of the USSR, and the years that followed. During the Soviet era, the creation of large farms based on collectivisation and industrialisation programs and meeting the demand for labour on farms thanks to the rural population led to the decline of small and medium-sized villages (mostly in mountainous areas) and the formation of villages with large demographic potential [Geography of the Republic of Azerbaijan, Economic..., 2014]. Moreover, the collapse of the Soviet Union played a special role in the evacuation of mountain villages as well. Thus, the closure of several working places in Azerbaijan with the collapse of the USSR led to the evacuation of mountain villages. Because of the suspension of some enterprises in the newly independent country, the economic difficulties caused by the abolition of the collective farm, the emergence of individual entrepreneurship, and the inability of the population to adapt to the current situation, the migration processes among the population gained momentum. The migration that began in those years also stimulated the migration of families and their relatives to those areas in the following years, and this process is still ongoing.

Sustainable rural development model. When comes to the sustainable development concept, can be defined as a set of activities aimed at meeting the basic demands of the population while conserving natural resources for future generations [Adamowicz, 2020]. In other words, the concept of sustainable development of rural places can be considered as simultaneous enterprises to enhance the living condition of the rural population and the general condition for business-related activities while conserving the resources of these places, including cultural heritage, landscape, and natural resources. In this respect, it is important to search for convenient improvement

strategies to provide overall improvement for the living condition of the rural population. Rural development is the concept that ensures the improvement of the living quality of the population and the socioeconomic well-being of the population settling in rural areas, especially isolated and sparsely populated areas [Mosely, 2003]. More precisely, rural development reduces the gaps between rural and urban settlements, including by preventing the acceleration of the polarisation process between rural and urban settlements. Rural development also plays a pivotal role in reducing poverty among the rural population, ensuring sustainable socio-economic development of villages, repopulating endangered villages, and increasing the growth rate of villages with low population growth rates.

It is an undeniable fact that in underdeveloped and developing countries, rural settlements comprise large areas, and almost half and over of the population settles in these settlements. Hence, encountering the challenges associated with climate change, poverty, and socioeconomic threats is inescapable.

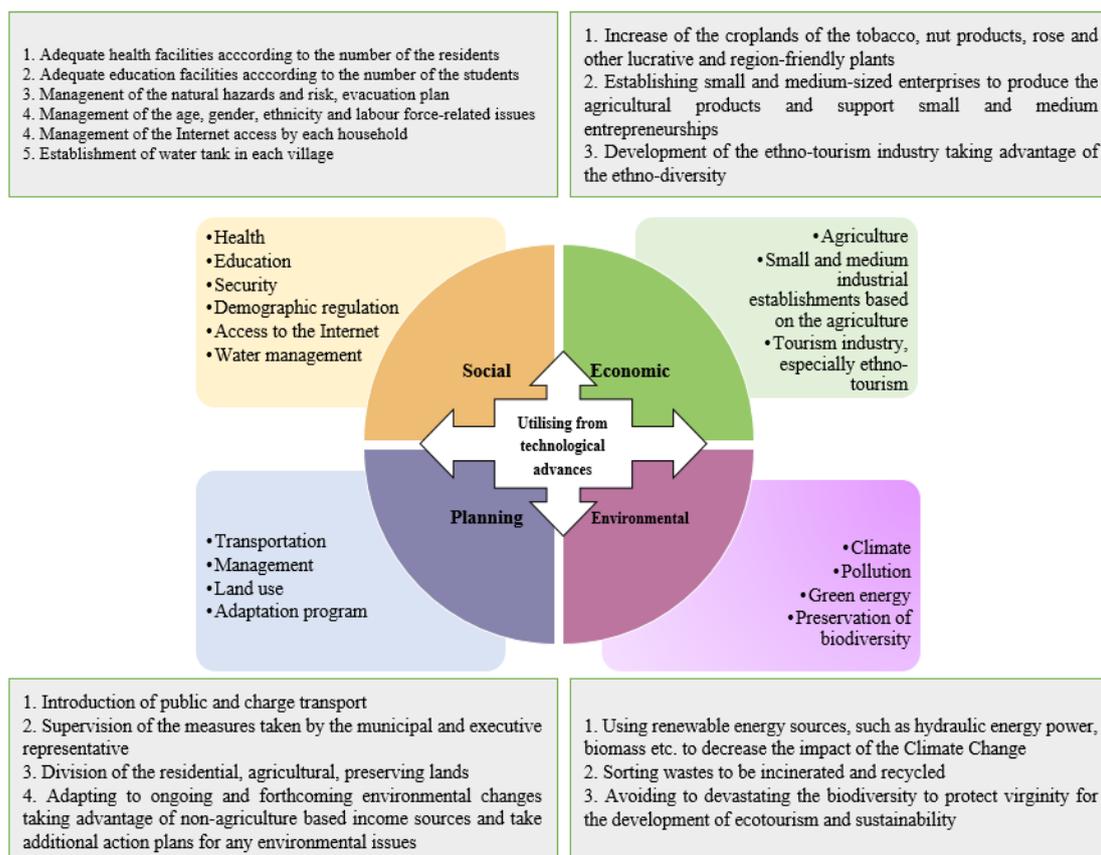
Rural areas play an essential role in the settlement systems of the countries. While preserving its landscape and natural resources, the rural places provide the urban places with basic needs and a labour force [Mihai, Iatu, 2020]. Secondly, villages can be a source of income by developing one of the most profitable non-technology-based economic sectors, such as ethnic tourism and ecotourism. Thirdly, the rural settlements are the places that can feed the ever-growing population.

Predominantly, there are four approaches while developing a rural development model [Hodge, Midmore, 2020]. These include sectoral, multisectoral, territorial, and local approaches. Taking into account these approaches' various and specific characteristics, we used the multisectoral approach when making a sustainable rural development model. In short, in the multisectoral approach, the rural economy and the development of the rural places are based not only on agriculture but also on other areas of the economy (recreation and tourism, service, etc.).

It is known that commendable development strategies have been developed in the world countries in order to provide sustainable development of rural settlements and these foreign experiences can be used for the development of villages in Azerbaijan, especially mountain villages. However, it should not be forgotten that these practices need to be adapted to the local environment, or a development model adapted to the local situation. Because every country or any region of the country has several specific problems in their mountain villages. In this case, a specific development plan for the area would be more appropriate. This plan should be in line with the natural and geographical conditions of the area, as well as the lifestyle of the people living here. Surely, when building a development model, it is expedient to use state-of-the-art technological practices for sustainable development. However, it is impossible to technologicalise villages all of a sudden. Because the technologization of mountain villages and the construction of “smart settlements” or “smart villages” is a capital-intensive and time-consuming process.

A sustainable rural development model serves the following purposes (Fig. 6):

1. Annihilation of the uneven socioeconomic development and poverty in rural places;
2. Annihilation of the rural-rural and urban-rural dividend and polarisation problem with the development of the application of state-of-the-art technology in the research area;
3. Repopulation of the region with the aim of protecting the ethno-diversity of villages where the population was accounted for by the ethnic minorities;
4. Adapting to ongoing and forthcoming environmental conditions and searching for new income sources by developing no farming activities, such as ecotourism and ethnic tourism.



*While preparing the sustainable development model, rural communities' notions were considered.

Fig. 6. The sustainable rural development model for the ethno-diverse mountain villages of Azerbaijan
 Рис. 6. Модель устойчивого сельского развития для этноразнообразных горных сел Азербайджана

One of the essential issues to be considered when establishing a sustainable rural development model is in-situ urbanisation. In-situ urbanisation is in fact a model of rural development and is to bring the living standards of the rural population to the urban level without turning the rural settlement into an urban settlement in terms of size and population [World Social Report, 2021]. This form of urbanisation has been used in recent years to prevent the influx of people from villages to other settlements, especially to large cities with large employment opportunities. This practice is used in several European countries and other countries around the world [Harbiankova, Gertsberg, 2022].

While developing a sustainable rural development model, 4 essential aspects, namely social, economic, environmental, and planning aspects should be considered. Moreover, while developing a sustainable rural development model, it is important to take advantage of technological innovations. These indicators of the sustainable development model are connected to each other.

Conclusion

Sustainable rural development comprises a holistic approach and targets obliterating extreme poverty, depopulation, preserving ethnic minorities, and other critical issues, as well as annihilating the polarisation process among settlements in remote rural areas of the northwestern regions of Azerbaijan. It is important to consider that numerous non-agriculture-based activities coupled with agricultural systems and adapted to the local geographical conditions should be developed and these activities should be more resilient to any environmental challenges within the context of climate change.

Additionally, the model can be applied in small villages as well as large mountain villages. Not only that, in order to prevent additional costs, large villages can play the role of “donor” for the development of small mountain villages located in the neighbouring (low-lying) belt.

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