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Research Paper

Post conflict and Ecological Condition of the Jabrayil Region in the Post-Occupation Period

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Abstract

The paper is concerned with the ecological terror that happened by Armenian forces in the Jabrayil district for near 30 years. Entering the territory is impossible that's why all the study has been carried out based on the aerospace materials gained from remote sensing monitoring. The natural resources and infrastructure has been ruined by Armenians. The ecosystem of the region has been frozen after this terror which was unseen anywhere. As a result of the monitoring, it was revealed that the land cover has lost the property kinds in the local legal sphere once were done during land reform 30 years ago. Besides the biodiversity of the district, a great deal of historical and cultural monuments, museums, and old buildings was destroyed completely. Today neither nature nor history exists in the Jabrayil district. We found nothing to study in the region except remnants of war. Finally, certain researches have to be carried out in the region after the II Garabagh War after the land area has been cleaned from the mines.

After liberation from occupation, for the last 3 years, landscaping and construction and restoration work has begun in the Jabrayil region. Creation of the "Araz Valley Economic Zone" is very important an event for the development of the Jabrayil region. The program for the phased restoration of all villages in the region has been approved by the state. Currently, a large project is being implemented in the Jabrayil region, covering 200 hectares of land. 4-6-lane roads have been built for access to the region. SOCAR and BP plan to build a solar power

plant with a capacity of 240 megawatts. In the future, it is planned to build a memorial complex in the Jabrayil region, its foundation has been laid.

Introduction

Independent Azerbaijan has experienced many difficult and glorious days and moments in its history. The brightest pages in the history of our statehood were written in the Patriotic War, which began on September 27, 2020 and lasted 44 days. Each victory won under the leadership of the Commander-in-Chief, President of the Republic of Azerbaijan Ilham Aliyev in the Second Patriotic War and the liberation of our occupied lands became the pride of the Azerbaijani people, who tirelessly waited for a great victory for 30 years.

The liberation of the Jabrayil region after 27 years of occupation has become an unforgettable day of pride for the entire population of Jabrayil. In order to lose traces of history, the enemy destroyed cultural, religious and historical monuments, even cemeteries, committed acts of vandalism and ecological terrorism [5,12].

No matter how hard the enemy tried, he could not change history. You cannot change history by destroying cultural and religious monuments, cemeteries and nature. On those lands there are traces of our ancestors. History has shown once again that the truth cannot be

changed. The clearing of Jabrayil from Armenian terrorists raised the spirit of the Azerbaijani people, fighting spirit and self-confidence in our army.

When the Jabrayil region was under Armenian occupation for 27 years, Armenian vandals completely destroyed 72 secondary schools, 8 hospitals, 132 historical monuments, 150 cultural centers, about 100 villages, tombs, mausoleums and mosques in the region. It turned out that as a result of the occupation by the Armenians, the Jabrayil region caused damage in the amount of 13928 billion US dollars. The rights of the citizens of the region, as well as the population of other regions of Garabagh, were violated, and they continuously lived as refugees for 27 years. They were forced to live in refugee camps, boxcars, hostels and other places.

The territory of the Jabrayil region is rich in cement, marble, sawstone and other valuable building materials. It is known that the region has deposits of iron ore and even oil. Before the occupation, the population of the region was mainly engaged in viticulture, animal husbandry, grain cultivation and cocoon growing. The development of science, education and culture in the region has reached a very high level. There were 92 doctors, 432 medical workers, more than 1660 teachers, 3 music schools, 12 culture houses, 32 clubs, 10 cult auto clubs, 78 libraries and 1 museum in county hospitals. There were 8 industrial enterprises, 42 collective farms and associations for fattening small cattle, poultry farms in the Jabrayil region [3,4,12].

Generally, Azerbaijan has got 66 districts including Jabrayil one which is located in the southwest part of the country within the Eastern Zangazur Economic Region determined to the President’s decree signed 2021 July 7. The borders of the district are surrounded by Khojavand, Fizuli, Gubadli, Zangilan and Iran Islam Republic. Jabrayil has been ruined by the Armenian

occupants for a long time and rebuilding is demanded in the territory. Till this occupation, the amount of population was near 81700 persons. The name of Jabrayil was taken from the name of the village Jabrayil which was the centre of the region. Father Jabrayil, who was the founder of the village Jabrayil, was one of the closes of the ruler by name Sultan Ahmed who lived in the VIII century and the territories between Ziyarat Mountain and the river Araz belonged to Father Jabrayil and his sons. Historically the region is the agrarian one several crops were cultured in the region up to today including cotton, grapes, wheat, balers, fruit trees, berries and so on. At present to travel is impossible to the territory; the mine cleaning process will take about 10 minutes at least [1,2].

The Jabrayil region was organized in 1930. Previously, it was called the Jabrayil region of the Yelizavetpol province. The surface is mainly a sloping plain (Indjachol, Gayane steppe), low mountains in the north. Its main rivers are Araz, Indjachay and Chakhmagchay. Cretaceous deposits are widespread in the mountainous part, Neogene and partially anthropogenic deposits on the plains. The main rivers are the Araz and its tributary the Chaylag. Chaylagchay originates in the southern foothills of the Lesser Caucasus (1750 m). Since Chaylagchay is widely used for irrigation, its water does not reach the mouth. The climate in the southern part of the region is mild hot semi-desert and dry desert with dry summers, and in the northern part it is mild hot with dry summers. Semi-desert, mountain-xerophilous vegetation prevails, as well as forests. Pyrenean oak (*Quercus iberica*), carpinus (*Carpinus sp*.), mulberry (*Mespilus germanica*), hawthorn (*Crataegus sp*.), nine-leaf clover (*Lonicera sp*.), ligistrum sp., barberry (*Berberis sp*.), pomegranate (*Punica granatum*), eucalyptus (*Pistacia mutica*), willow pear (*Pyrus salicifolia*), blackthorn (*Paliurus spina-christi*), juniper (*Juniperus sp*.). Tamarix sp., willow (*Salix sp*.), poplar (*Populus sp*.), tea tree (*Hippophae rhamnoides*), pomegranate

(*P. granatum*), blackberry (*Rubus sp*.) are common along river banks. Animals include roe deer (*Capreolus capreolus*), brown bear (*Ursus arctos*) in mountain areas, wolf (*Canis lupus*), jackal (*Canis aureus*), red fox (*Vulpes*), wild boar (*Sus scrofa*), wild cat (*Felis silvestris*).) in relatively low areas, lynx (*Lynx*), gray hare (*Lepus europaeus*), white harrier (*Erinaceus concolor*), badger (*Meles*) and others find living creatures. Among the birds in this area there are hazel grouse (*Francolinus*), pheasant (*Phasianus colchicus*), gray partridge (*Perdix*), steppe eagle (*Aquila nipalensis*), gray-eared falcon (*Falco naumanni*), Leshy bald eagle (*Neophron percnopterus*), griffon vulture (*Gyps fulvus*). One of the interesting geological natural monuments of the region is the karst cave "Divler Palace", located near the village of Dagh-Tumas. The Jabrayil region is famous for its ancient plane trees. Here there are plane trees aged 1000-3000 years. Academician Valida Tutayuk notes that in the village of Khorovlu there are plane trees 1000 years old, in the village of Fuganly - 2800-3000 years old, and in the village of Karhulu - more than 3000 years old. Shikhlar cave of the Stone Age in the village of Shikhlar. Round grave in the village of Shikhlar (XIV century). Round and octagonal tombs in the village of Khobarly (XVII century). In the city of Jabrayil there is a medieval necropolis of Agh-oghlan, Sultan Allahverdi bath, Maiden's fortress near Daridagh and Khudafarin bridge [6,8].

The First Garabagh War:

The territory was occupied by Armenian forces on August 23, 1993, during the First Daghlig Garabagh War the district was within Hadrut Province except for Jojug Marjanly village. This village was the district’s provisional centre till the last recapture. The region area was 1,050 km2 before occupation having 92 villages. There were 72 middle schools, 8 hospitals, five

mosques, two museums, 120 historical monuments, and 149 cultural centres in the district, today there is no one of mentioned above.

After the Second Garabagh War:

On October 09.2020, the Azerbaijani Ministry of Defence announced military action to save the recaptured districts. On October 20, 2020, Safarsha, Hesengaydi, Fuganli, Imambaghi, Dash Veysalli, Aghtepe, and Yarakhmadli villages were recaptured. The territory was destroyed fully during Armenian forces' capture many times. The area became fought polygon for many years, rebuilt of the region demands too much labour by the Azerbaijan Republic. The ecological terror happened in the Jabrayil area and the local populations become refugees, and the accommodations were ruined. According to the State Statistics Committee of Azerbaijan Republic for 2013, there was 1 city, 4 settlements and 92 villages in the district having 1050 km^2 area.

Soil definitions for properties, ecosystems, and water basins have been wasted and under danger now. Forests saving the fields, gardens other green lands were cut and ruined which caused the deforestation and desertification processes in the territory. The governmental strategic organizations are being recovered now to control the infrastructure of the district. Having realized recapture in the territory real scene of the district is unbelievable. One of them was given below in the real picture [7,9,11].

As seen from the picture all the accommodations, settlements, and buildings were destroyed during the Armenian occupation. The trees and bushes around the houses. Fields protecting woodlands have been cut and burned purposely. The historical enemy policy of the Armenian republic caused this scene after all. At present, the soil cover of the region is in bad condition. There are mainly chestnut and dark chestnut soil types which are effective for the

agrarian field. Historically wheat, cotton, flax, barley, grapes and other plants were cultivated, but now these soils should be studied again to develop land distribution including personal properties. The infrastructure of the region has been destroyed and only old walls of the houses and buildings are existing here. The district is an agricultural region because of the natural situation. Therefore, in order to rehabilitate the biodiversity quality indexes of soils and agro-irrigation methods, soil sanitation, economic and ecological estimation of the soil state. That's why soil investigations have to be realized step by step. The monitoring process for biodiversity kinds can be carried out on the base of GIS materials at distance observation [10]. While comparing old archive materials with modern aerospace ones, the real risks and hazardous dangers become evident. The territory of the region needs fundamental investigations to recover the biodiversity fully in further.

Materials and methods

The tale of biodiversity recovery depends on the soil state, however. As the initial research distance observation, the GIS-based materials are helpful to analyse the current state. Forest and green land line's total area covers only 0,24% of the territory which means the territory has been fully deforested. The tree cover rehabilitation was realized through the self-growing process of trees and bushes. No one tree was planted vice versa the cutting process has been realized for a long time in the area. It is impossible to speak about the state status of the soil distributions here. In any way, an initial fundamental soil study has to be realized and the quality indexes of them are to be revealed to make the classification in soil cadastre. Further land reform is to be organized on the base of the soil investigation. If none of the research in soils study has been realized this process can never be carried out. All recovery deeds depend

directly on the soil study and soil expeditions or the stationaries' actions in the territory. Today Azerbaijan scientists have only one way to study the district area's geographical situation. According to the aerospace materials, the forest potential of the district isn't existing at present because of having been cut for a long time.

On the map, the district area's current status is completely seen that the severe military erosion, desertification, and deforestation existing in the territory. In any way, the investigations' results are in our hands. The current aerospace materials and the former ones are compared and the final monitoring has been realized. The problems happened in biodiversity should be determined and solved after long-term research in the district area [10].

Results

While analysing the distance observation materials and the fond, archive ones very interesting facts have been revealed. NASA Access Viewer base date gives us the climatological database for soil and land cover in any format so tabled form and as the graphics, dependences. Due to the former statics' information and soil reports the soil map of the region was developed and given here.

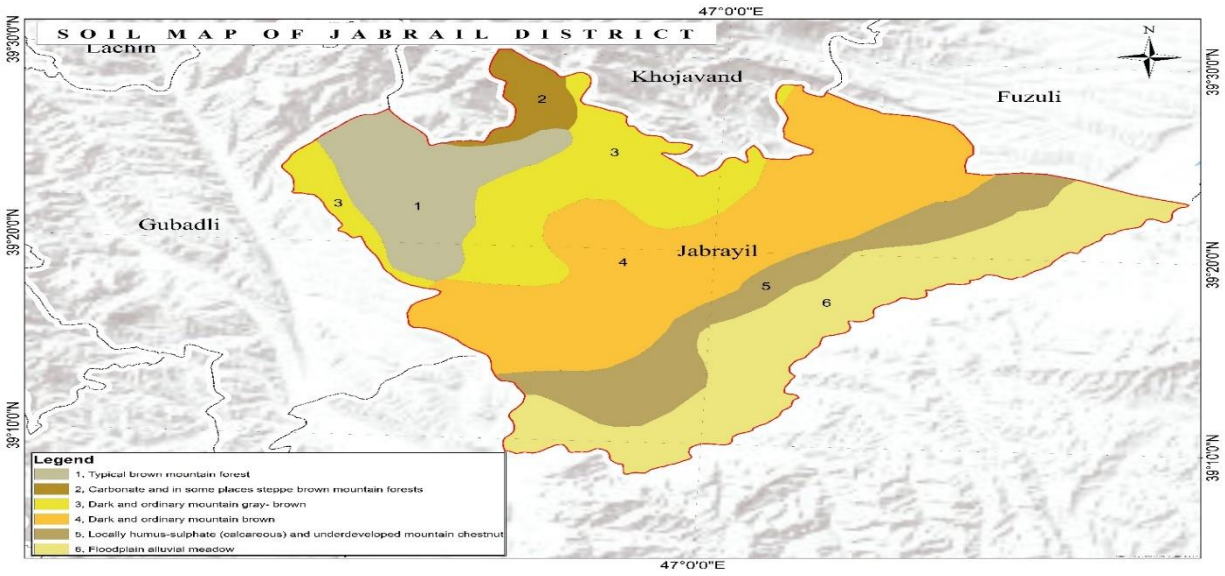

Figure 1. Soil map of Jabrayil district

The soil map was developed after the final war due to the distance observation and aerospace materials based on the achieved map. Totally there are 6 soil types in the district as mentioned in the soil map legend. They are typically brown mountain forest soil, carbonated and stepped brown mountain forest soil, dark and ordinary mountain grey-brown soil, locally humus-sulphate and undeveloped mountain chess-nut soil, and flood plain alluvial meadow soil. Annual and monthly agrarian climatological data and index have been gotten from the long-term monitoring results. Depending on the atmosphere precipitations moisture index is the main factor for soil cover.

To the NASA data access viewer dealing agroclimatology section, soil profile moisture graphically from 1981 up to the present (2020) was obtained and given below.

As seen from the graphic the moisture in the soil profile has been higher from 1981 till 1993. The hazardous changing in biodiversity, local ecosystem, and natural zones show that a fundamental investigation has to be carried out and this problem will be actual for many years.

Agrarian situation of Jabrayil district. Jabrayil district of Azerbaijan has a very large useful land area. However, since August 1993, when it was occupied by the Armenians, the lands of this region have remained almost unused, and this has damaged the economy of our country for many years. All the wealth of Jabrayil, which is an agricultural and livestock region, was looted by enemy Armenians, and the infrastructure of the region was completely destroyed.

In the war that began in September 2020, the glorious army of Azerbaijan liberated the Jabrayil region, as well as our other territories, from encroachment (invasion) of the enemy. In connection with the liberation from the occupation, an action plan is being developed to start

new work in the direction of developing agricultural land on 24877 hectares out of 1717054 hectares of cultivated land in the region.

Ordinary chestnut, mountain-chestnut and brown mountain-forest soils are widespread on the territory of the Jabrayil region. The largest river in the region is the Araz River. In addition, the rivers Inchechay and Chaylagchay also pass through the territory of the district, and all lands are irrigated with the water of these rivers. The construction of the Khudafarin reservoir in the region is a great support for the irrigation of 7,800 hectares of agricultural land. The presence of high-water rivers on the territory of the region and favorable climatic conditions created favorable conditions for growing both annual and perennial crops for the population of the region. Favorable climatic conditions create good conditions and opportunities for the spread of large pastures in the region and, accordingly, the development of animal husbandry. The area also has favorable conditions for growing various types of fruits and vegetables.

Before the occupation, viticulture was well developed in the Jabrayil region, the harvest was plentiful. At present, the best crops can be harvested in this region due to the abundance of water, climate and fertile soil. The use of modern approaches and techniques in agriculture will make it possible to obtain more products than was obtained in previous years.

After the victory over the enemy, the implementation of important projects for the effective and targeted use of the lands of the Jabrayil region, as well as other territories liberated from occupation, began. New power lines are being laid on the territory of the region, destroyed hydroelectric power stations are being restored, and measures are being taken to build railways. Preparations are underway for the construction of power plants to use wind and

solar energy to improve the environment. In order to restore the destroyed monuments of religion and culture in the region, their registration is carried out.

The current state of the lands of the Jabrayil region is being studied by specialists and scientists, and preparations are underway for conducting research work to eliminate negative situations. The average annual temperature of the soil surface in the foothill plains of the Jabrayil region is 24.8-25.80, and depending on the season, this figure ranges from 2.3-30.70. The vegetation of the region, characterized by a variety of climatic features, is remarkable for its biodiversity.

Wormwood, sagebrush semi-desert in the plains, wormwood, dry desert and semi-desert in the foothills, and xerophilous thickets, broad-leaved forests (oak, pistachio, etc.) are widespread on the mountain slopes.

Soil-forming rocks consist of andesite, andesite-basalt of volcanic origin in the foothills and mountainous areas, eroded alluvial, diluvia of the main rocks, and loess-like alluvial, sandy gravelly and clay sediments in the plains [8].

The interaction of natural complexes in the territory of the region has formed a unique soil cover composition. As mentioned above, mainly mountain-chestnut, common chestnut and brown mountain-forest soils are spread in the territory of the region.

The utilization of the total land resources of Jabrayil region is as follows: the total area of land resources is 104980 hectares. It covers 12.6% of the total land resources of the

Republic. Cultivated land in the region, 21045 hectares (40.2%), perennial crops 7243 hectares (13.8%), mowing 24 hectares (0.04%), meadows and pastures 23282 hectares (44.4%), backyards 815 hectares (1.6%), the total is 52409 hectares (49.9%).

Areas that are not used in agriculture and have environmental protection importance cover 46.2% of the total land fund of the region, including 4039 hectares (3.8%) under the forest, and 48532 hectares of other areas.

The forest areas that created a living cover on the mountain slopes have been deforested in some places and turned into steppe meadows. After the Armenian occupation, the situation of continued brutal destruction of the forest cover of Jabrayil region, as well as the entire territories of Upper Garabagh, has become more serious. Undoubtedly, the natural recovery of the former biodiversity of the region, which is subject to continuous and continuous anthropogenic impacts, will be very difficult in the future.

The agricultural land of the Jabrayil region is divided into quality groups as follows: the total area is 104 980 hectares, which is 12.6% of the agricultural area of the Garabagh economic region. Land credit rating scale 100-81; 80-61; 60-41; 40-21; 20-10. Quality groups I, II, III, IV, V. Cultivated land of group I is 8839 ha or 47.2%; 5535 ha or 45.9% in group II; 4630 ha (41.7%) in group III; 2041 ha (21.5%) in group IV; 20-10 no.

2818 hectares (15.1%) of perennial plantations in group I; 2477 hectares (20.6%) in group II; 1188 hectares (10.7%) in group III; 760 hectares (8.0%) in group IV; Not in group V.

Mowers in group I 10 hectares (0.06%); 6 hectares (0.05%) in group II; 5 hectares (0.05%) in group III; 3 hectares (0.04%) in group IV; not in group V.

Yard areas of group I 2078 ha (1.8%); 815 ha (4.4%) in group II; the other 3 groups do not exist.

There are no rural areas in group I. 169 ha (1.4%) in group II; 2021 ha (18.2%) in group III; 5223 ha (54.9%) in group IV; In the V group 1011 ha (100%).

Pasture and pastures. Winter pastures: 6240 ha (33.3%) in group I; 3862 ha (32.1%) in group II; 3270 ha (29.4%) in group III; 1486 ha (15.6%) in group IV; Not in group B.

The general distribution of agricultural land by groups in the region is as follows. 18,722 ha (35.7%) in group I; 12,049 ha (23.0%) in group II; 11,114 ha (21.2%) in group III; 9513 ha (18.3%) in group IV; in group V, it is 1011 ha (1.7%).

In the Garabagh economic region, including the Jabrayil region, in regions where useful land resources have been exhausted, attracting new lands to crop rotation is possible only with a significant improvement in this group of lands in the future. Less than 40% of the region's agricultural land is irrigated. Most of the irrigated area suitable for agriculture is cultivated and cultivated land. About 35% of perennial crops are grown on irrigated lands, which is 20-25% of irrigated lands in agriculture.

Irrigation is used on 70% of household land, which is up to 60% of irrigated agricultural land. Up to 4 000 hectares of meadow and pasture lands are irrigated, located in semi-desert and dry steppe conditions with flat areas.

Irrigated agriculture is poorly developed in the regions included in the Garabagh economic region, including the Jabrayil region, since agricultural crops are mainly grown in drum conditions. Since only small-scale irrigation is used in the district, the size of the irrigated fields is small.

The current state of the fertility of useful soils in the Jabrayil region is reflected in the figures given for their quality groups. 35.7% of agricultural lands belong to the first quality group due to their high fertility. 12049 hectares of land, corresponding to group II, are somewhat less fertile in terms of quality. 11114 hectares of these lands, whose fertility properties have deteriorated significantly, belong to group III. 9513 hectares of land suitable for use are assigned to Group IV, and 1,011 hectares of land that were in circulation are currently transferred to the state of conditionally unused (V group) land and are not used.

In quality groups, a high dynamics of transfer is observed mainly on the soils of sown and rested, partially perennial crops. In general, there are very few pastures and pastures, winter and summer pastures with high and good fertility rates in the Jabrayil region. The same can be said about the soil of agricultural crops and perennial crops.

It should be noted that in order to prevent and limit intensive changes in the downward dynamics of the transfer of land used in the agricultural cycle, it is necessary to implement fundamental reclamation measures. Otherwise, the expansion of the range of low-quality soils at the expense of quality groups I, II, and III is inevitable.

The ameliorative state of the general irrigated lands of the Jabrayil region was also determined and assessed. Due to the depth of groundwater in this region, the ameliorative state of irrigated lands has not been adequately assessed. The drainage conditions of the general Garabagh economic region, including the Jabrayil region, and the processes of salinization, salinization, waterlogging, erosion and other processes occurring there are considered factors that adversely affect the natural fertile properties of the soil.

One of the main reasons for the rapid erosion processes in this area is the active impact of man on nature. Along with surface erosion, with the reduction of forests, ravine erosion also

begins to develop. In addition to water erosion on the chestnut lands of the Jabrayil region, there are also many areas of wind erosion in areas with weak vegetation.

Conclusion

By realizing the monitoring in Jabrayil district, the current situation shows that the area is being investigated from all facets. Climate conditions, soil cover, and all kinds of biodiversity states need to be studied for a long time. After the mine cleaning in the Jabrayil region, these deeds can be realized.

It can be concluded that in order to preserve the properties of natural fertility that exist in the soil cover of the region and restore soil fertility, it is necessary to carry out comprehensive measures against erosion processes. In the course of the land reform carried out in Azerbaijan, the general land fund of the Jabrayil region, as well as the entire Garabagh economic region, was divided into forms of state, municipal and private property and used for its intended purpose.

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