

The green energy potential and natural resources in Karabakh

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Abstract: This article delves into the bountiful natural resources of the Karabakh region, spotlighting the Karabakh Plain and adjacent mountainous landscapes. The fertile lands support cotton and tobacco cultivation, with the Upper Karabakh Canal facilitating irrigation for vineyards and orchards. Despite this wealth, Armenia's occupation inflicted environmental harm through unauthorized exploitation of valuable deposits. The narrative pivots to Azerbaijan's commitment to green energy, positioning itself as a frontrunner in the field. President Ilham Aliyev envisions transforming liberated territories into "green energy" zones, offering a global model. The text underscores Azerbaijan's vast potential in renewable energy, aiming to curtail greenhouse gas emissions, especially in anticipation of hosting COP29 in 2024. Ongoing green energy initiatives attract foreign investors and involve collaboration with international companies, exemplified by the "Smart Village" project in Zangilan. Specific projects, such as wind and solar power stations, are outlined, along with the systematic use of solar and wind energy as key components of the "green energy" concept. Ambitious targets for restored energy in electricity generation underscore Azerbaijan's dedication to sustainable development, with COP29 hosting serving as a diplomatic triumph amid recent criticisms.

Keywords: Karabakh natural resources, Irrigation systems, Geological exploration, Green energy, Renewable energy sources, Foreign investments, Sustainable development, COP29 hosting, Restoration of energy potential, Environmental commitment.

1.INTRODUCTION

Many parts of Karabakh, especially the Karabakh Plain and the surrounding mountainous terrain, are rich in natural resources.

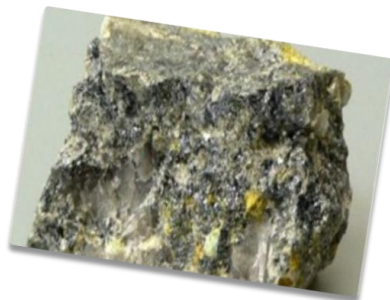
The Karabakh Plain is located on the right bank of the Kura River, between the Lesser Caucasus mountains

Karabakh Canal has been constructed for irrigation purposes.

The irrigation systems and abundance of rainfall in Karabakh provide opportunities for the development of vineyards and orchards in these areas. The



and the Kura River. In the fertile lands of the plain, cotton and tobacco are cultivated. The Upper



Karabakh Lake is situated in this area. Additionally, the mountains and forests in Karabakh are significant natural resources.

Azerbaijan's various districts are endowed with abundant black, colored, and noble metal ores, non-metallic minerals, construction materials, underground sweet, thermal, mineral, iodine-bromine industrial waters, and so on. Gold, copper, lead-zinc ores, and construction materials hold a special place in the exploitation of natural resources.

During Armenia's occupation of Azerbaijani territories, various technological activities and combat operations by the enemy have inflicted significant damage to the surrounding environment. Ore and non-ore deposits have been exploited (plundered) without any regard for technological norms.

Metallic valuable deposits are represented by chrome, polymetallic, copper, lead, zinc, and gold deposits. In addition to the main metals, ore compositions include precious metals such as silver, nickel, molybdenum, tellurium, selenium, and others. Among these, gold deposits hold the utmost importance. During the occupation period, the deposits of Soyudlu (Zod), Aghzibir Qiziltan, Aghduzdag, Qizilbulag and Vejnali were plundered by Armenians in collaboration with foreign companies, causing significant ecological and economic damage to our country.

As a result of the efforts of Azerbaijani geologists, gold, copper, tungsten, molybdenum, chromium, lead-zinc, and building stones, facing stones, mineral pigments, and various deposits have been discovered in Karabakh, including Soyudlu, Gazikhanli, Zargulu, Gizilitan, Aghzibir, Agduzdag, Galaboynu, and others. The exploitation of the Soyudlu-Zod gold deposit dates back to the third millennium BC. Geological exploration work was conducted in the Soyudlu area during the 1970s and 1980s. Discoveries such as ancient mine shafts, wells, caves, and gold-producing tools from that time provide evidence that gold was extracted in this area some 4,000 to 5,000 years ago. Zar village is famous under the name of "Shahrizer" (City of Gold).

As a result of geological exploration conducted in the years 1960-1964, chromite deposits of the Goydara Group in the Kelbajar region and chromite manifestations of the Silk Group in the Lachin region were discovered.

The Goydere chromite deposit is located upstream of the Su Bulag stream in the Kelbajar region.

The Agyataq copper deposit is located in the Kelbajar region. The deposit is mainly composed of upper and partly lower slope sediments. Here, the thickness of upper slope sediments is close to 650 meters.

In addition to natural resources, it has been reported that there is a sufficiently restored energy potential in the Karabakh region.

Countries worldwide prioritize the use of renewable energy sources, known as "green energy," to combat

negative impacts on the environment, protect the ecosystem, and address climate change.

According to the report of the International Renewable Energy Agency (IRENA), over 80% of newly installed electricity generation capacity last year came from renewable energy sources.

Azerbaijan is one of the countries with extensive potential in renewable energy sources. According to the report of the International Renewable Energy Agency, the installed capacity of renewable energy sources in Azerbaijan amounted to 1291 MW (17% of the total capacity).

The potential volume of Azerbaijan's renewable energy sources is estimated at 27,000 MW.

The potential for solar energy is estimated at 23,000 MW, wind energy at 3,000 MW, hydropower from mountain rivers at 520 MW, and bioenergy potential at 380 MW.

Azerbaijan declared its intention at the UN Climate Change Conference (COP 26) to reduce greenhouse gas emissions by up to 40% by 2050 and create a "clean zero-emission" zone in the liberated territories. The conversion of the liberated territories into green energy zones is one of the main directions in President Ilham Aliyev's economic development course for the liberated areas.

President Ilham Aliyev's statement that the "Karabakh region will serve as an example for the world as a 'green energy' zone" is not a coincidence.

Karabakh region is rich in terms of restored energy sources.

Within the framework of creating green energy zones, measures are planned in the liberated territories, including electricity generation from restored energy sources, the use of electric vehicles, energy efficiency initiatives, deployment of solar panels for heating, cooling, and hot water supply, and the use of solar-powered LED lamps for street and road lighting.

All these sources provide an opportunity to implement new energy projects in our liberated regions.

Extensive work is consistently being implemented in this direction.

Steps are being taken to attract foreign investors to "green energy" projects.

Collaborating with foreign companies is not only essential for expanding our country's economic ties but also crucial for the rapid recovery of our completely devastated territories as a result of the Armenian occupation.

Birinci Agali village in Zangilan district is not only the first "Smart Village" project established in Karabakh but also in Azerbaijan. All residential houses, administrative and catering buildings, social facilities, and the processing and production process of village agricultural products will be supplied with restored energy sources here. The participation of experts from

Turkish, Italian, Chinese, and Israeli companies in the implementation of the project is crucial for learning from global experiences and maintaining Azerbaijan's position among world countries.

Companies like the United Arab Emirates' "Masdar," Saudi Arabia's "ACWA Power," China's "Gezhouba Group," and Japan's "TEPCO" have shown interest in investing in "green energy" projects in the liberated territories.

The construction of a 240 MW wind power station and a 230 MW solar power station has begun as part of a pilot project in collaboration with "ACWA Power" and "Masdar" companies. In general, the construction of these stations, with a total capacity of approximately 470 MW, is planned to be carried out with a full foreign investment of around 500 million dollars. These stations will produce 1.5 billion kWh of clean energy, allowing for the reduction of carbon dioxide emissions by 600,000 tons and saving 330 million cubic meters of natural gas annually.

The systematic use of solar and wind energy is one of the key elements of the "green energy" concept. Considering the significant solar and wind potential in the liberated territories, harnessing the energy produced in these areas could create opportunities for transferring it to other regions.

Aghdam is one of the sunniest regions in Azerbaijan. The abundance of sunny days in Aghdam highlights the potential for utilizing solar energy, indicating future plans for using solar and other restored energy sources in the region.

Furthermore, the construction of a new 240 MW solar station in Jabrayil district and the establishment of wind power stations close to 10,000 MW in the Lachin-Kelbajar regions represent steps taken in the direction of applying green technologies.

As part of the recovery of electricity generation capacities, 4 Hydroelectric Power Stations with a total capacity of 20.2 MW have already been commissioned in Lachin, Kelbajar, and Sugovushan:

"Gulabird" Solar Power Plant (8 MW), "Sugovushan-1" Hydroelectric Power Station (4.8 MW), "Sugovushan-2" Hydroelectric Power Station (3 MW), "Kelbajar-2" Hydroelectric Power Station (4.4 MW).

The construction of two hydroelectric power stations is currently underway on the Araz River in the Jabrayil district, with a total capacity of 140 MW for the Azerbaijani side (100 MW in Khudafarin and 40 MW in Giz Galasi).

Approximately 25% of Azerbaijan's water resources are located in the Karabakh region. There is a potential for small hydroelectric power stations in Karabakh with a capacity of 140-150 MW.

In Kelbajar and Lachin districts, 12 Hydroelectric Power Stations, previously dismantled by Armenians,

are being restored, and 7 of them have already been put into operation.

The plan is to increase the share of restored energy in the electricity generation capacity to 24% by 2025 and 30% by 2030. The initiatives have been launched, and there is also interest from foreign investors in this regard.

Yes, it is known that the 29th session of the Conference of the Parties (COP 29) to the United Nations Framework Convention on Climate Change (UNFCCC) will be held in Azerbaijan from November 11 to 24.

Sultan Ahmed Al Jaber, the Minister of Industry and Advanced Technology of the United Arab Emirates (UAE), has been announced as the president of COP28.

It should be noted that the hosting of COP rotates among the five regional groups of the United Nations. Each regional group must collectively agree on a member country to host this conference through a general consensus.

In 2024, it is the turn of the Eastern European Group, which includes our country, to host COP29. Azerbaijan has put forward its candidacy to host the conference.

Alongside Azerbaijan, Armenia and Bulgaria also put forward their candidacies. In the statement announced as a result of direct negotiations between the Administration of the President of the Republic of Azerbaijan and the Office of the Prime Minister of Armenia on December 7th, it is stated: "The Republic of Azerbaijan and the Republic of Armenia hope that the countries within the Eastern European Group will also support the candidacy of Azerbaijan."

Subsequently, Bulgaria withdrew its candidacy.

On December 9th, Azerbaijan was designated by the Eastern European regional group to host COP29 in the year 2024.

Azerbaijan hosting COP29, one of the world's largest and significant international events, is another triumph for President Ilham Aliyev.

This stands as the greatest success in our foreign policy after leading the Non-Aligned Movement and being a member of the Security Council.

At the same time, it serves as a consistent response to certain circles that have recently launched a smear campaign against Azerbaijan.

3.CONCLUSION

The article highlights the rich natural resources of Karabakh, particularly the Karabakh Plain and surrounding mountainous areas. It emphasizes the ecological and economic damage caused during Armenia's occupation, detailing the plundering of valuable deposits. Despite these challenges, the

narrative shifts towards a promising future, focusing on Azerbaijan's extensive potential in renewable energy sources. The commitment to creating "green energy" zones in the liberated territories, President Ilham Aliyev's vision, and ongoing projects such as the Smart Village in Zangilan district showcase the nation's determination for sustainable development. Foreign collaborations and investments further underscore Azerbaijan's global environmental initiatives. The ambitious plans for solar, wind, and hydropower projects, as well as hosting COP29, solidify Azerbaijan's position in environmental leadership. Ultimately, the text presents a comprehensive overview of the region's natural wealth, the environmental challenges faced, and the proactive steps taken towards a sustainable, green future despite past adversities.

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