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Azerbaijan's Push for Carbon Neutrality: Aspirations and Realities in a Fossil Fuel Economy after COP29

Azerbaijan, a country heavily reliant on oil and gas - accounting for over 90% of its exports - has long served as a critical energy hub connecting East and West. However, its dependency on hydrocarbon resources contrasts sharply with the global push for carbon neutrality, compelling the nation to explore alternative energy pathways. Over the past decade, the country has struggled to establish comprehensive green policies or foster widespread green literacy. At COP29 which was held between 11 and 22 November in 2024 in the capital city of Baku, Azerbaijan showcased its ambitions by declaring 2023-2024 as the "Green Solidarity Year" to boost up green transitions across various sectors. These efforts including plans to transform the Karabakh region into a green energy zone, signal a shift toward sustainability. Additionally, collaborations with international organizations and partnerships with the EU have opened avenues for renewable energy investments and policy development. Yet, questions persist about the depth of these commitments, particularly concerning the role of Azerbaijani higher education institutions (HEIs) in promoting climate action and the potential for greenwashing. Post-COP29 Azerbaijan has assumed numerous obligations to strengthen its climate action framework. The government must foster collaboration among universities, businesses, and industries to create a unified response to climate challenges. Azerbaijani universities, in particular, are expected to take an active role in promoting scientific research, raising environmental awareness within communities, and contributing to evidence-based policymaking. Introducing eco-focused curricula and programs in education at all levels is essential to build a green-literate society. Furthermore, a centralized waste management policy is crucial for addressing environmental issues in urban and rural areas alike. Community-driven initiatives coupled with robust government policies, can ensure that sustainability becomes a societal priority. Amid the growing urgency of global climate action, Azerbaijan's commitments will be tested by its ability to balance economic dependency on fossil fuels with the imperative for sustainability.

1. Introduction

Azerbaijan's Green Economy Policy underscores the role of sustainability and climate action as key drivers of national development. For many years, environmental awareness has been lacking in almost all strata of Azerbaijani society, including academia, business, and the general public. Recognizing this gap, the government declared 2023 as the "Year of Green Solidarity" to better its environmental efforts and raise awareness.¹ The COP29 summit helped align Azerbaijan's policies with international climate goals by emphasizing the importance of sustainable practices in every sector. Azerbaijan has committed to several international climate agreements,

¹ See: <https://president.az/az/articles/view/62737>

including the Paris Agreement, and is working to decrease greenhouse gas emissions by 40% until 2030 and become carbon neutral by 2050.² Key actions include increasing renewable energy capacity, modernizing industrial processes, and promoting sustainable agriculture. Moreover, Azerbaijan's Green Solidarity initiatives engage government, academia, and businesses in the realization of eco-friendly solutions, including waste management reform and energy efficiency improvement.

Therefore, the post-COP29 implications underline the need for vigilant measures against greenwashing, where companies falsely market their practices as environmentally friendly. True progress calls for transparent reporting, strong policy enforcement, and public engagement. Climate literacy and integration of sustainable practices across society will be critical areas as Azerbaijan advances its green economy.

2. Geopolitical Context and the Push for Green Energy Resources

The Russian invasion of Ukraine in 2022 disrupted global energy markets, particularly in Europe, exposing the risks of relying on a limited set of suppliers.³ This prompted the European Union (EU) to rethink its energy strategy, prioritizing diversification and reducing dependence on Russian fossil fuels. Azerbaijan emerged as a crucial partner in this shift due to its renewable energy resources, strategic location, and growing green energy initiatives. The country signed the Agreement on Strategic Partnership for Green Energy with Georgia, Romania, and Hungary, which aims to supply green energy to the EU, including Moldova and Ukraine, through a 1,100-kilometer cable linking Azerbaijan to Romania.⁴

This collaboration enhances EU energy security, with Azerbaijan's Caspian Sea wind farms playing a key role in providing clean energy. Hungary, the first European country to receive green electricity from Azerbaijan in December 2022, underscores the success of this partnership.⁵ Azerbaijan is also committed to reducing methane emissions and has secured international partnerships to develop clean energy projects. As part of its green economy strategy, "Azerbaijan 2030: National Priorities for Socio-Economic Development" focuses on innovation, sustainable industrial practices, and a circular economy.⁶ These efforts, alongside investments in solar and wind power, strengthen Azerbaijan's energy security while contributing to global sustainability goals.

3. Green Energy Diplomacy: A Hopeful Path to a Sustainable Future?

At the heart of Azerbaijan's vision is the Green Energy Zone initiative. This program, aimed at constructing a sustainable energy center in the liberated areas, includes building 72 small hydropower plants, which are expected to reach a total capacity of 467 MW by 2030. As of 2023, there are 28 hydropower plants either rebuilt or newly built with a total capacity of 226 MW.⁷ Rapid

² See: https://unfccc.int/sites/default/files/resource/aze_burl_eng.pdf

³ See: <https://www.consilium.europa.eu/en/policies/eu-response-russia-military-aggression-against-ukraine/impact-of-russia-s-invasion-of-ukraine-on-the-markets-eu-response/>

⁴ See: <https://www.euronews.com/2022/12/17/hungary-romania-georgia-azerbaijan-agree-to-black-sea-electricity-project>

⁵ See: <https://minenergy.gov.az/en/xeberler-arxivi/00395>

⁶ See: <https://president.az/en/articles/view/50474>

⁷ See: <https://minenergy.gov.az/en/alternativ-ve-berpa-olunan-enerji/azerbaycanda-berpa-olunan-enerji-menbelerinden-istifade>

progress is indicative of Azerbaijan's commitment to integrating renewable energy into its national energy system, creating a solid energy infrastructure that highlights the importance of clean energy sources. Moreover, this project aligns with Azerbaijan's broader green energy diplomacy, thus solidifying the country's role as a regional leader in this area. Most notably, the overall vision of Azerbaijan for Karabakh. Once a place of conflict, the region is now planned to become Azerbaijan's "Silicon Valley" for green energy innovation. With its abundant natural resources, including large water reserves, geothermal potential, and favorable conditions for wind and solar power, Karabakh can be one of the leading places for new developments in renewable energy.⁸ The development of smart villages, such as the Aghali village project, is one of the best examples of the country's green reconstruction. This project epitomizes the tenets of sustainability and energy efficiency while illustrating how Azerbaijan can use cutting-edge technology to convert previously conflict-affected areas into prosperous, environmentally sustainable communities.

Urban green planning in Azerbaijan continues in the Gubadli and Zengilan districts with much emphasis on sustainability and the preservation of the environment. Such areas are being developed with the help of international urban planning agencies like the Swiss Urban Planning Agency, in consideration of incorporating the use of renewable energy technologies, sustainable transport systems, and environmentally friendly infrastructure. The Swiss paradigm of green energy is being applied for these initiatives in Karabakh by using best practices of one of the leading countries in promoting renewable energy sources. Similarly, tourism development by Kalbajar and Zangilan's pledge to preserve natural spaces, with an emphasis on park development, further show how sustainable development can blend with local culture and economic activities.⁹

Azerbaijan's commitment to a Green Energy Zone extends to the Nakhchivan Autonomous Republic. In accordance with the measures outlined in the "Detailed Action Plan for 2023-2024" under the State Program on Socio-Economic Development, this sector will benefit from large-scale efforts in green energy. Firms like Nobel Energy Management, TotalEnergies, and A-Z Czech Engineering have been signed and are expected to carry out green energy projects with a total capacity of over 1,000 MW. These initiatives are in addition to Azerbaijan's position as a critical player in the global renewable energy market.

Azerbaijan's solar energy potential is yet another area in which the country is posting significant advances. With an economic potential estimated to reach 23 GW and a favorable climate that enjoys from 2,400 to 3,200 hours of sunshine annually, Azerbaijan is well placed to become a major maker of solar energy.¹⁰ The recent commissioning of the 230 MW Garadagh Solar PV Plant is a recent example of the country's seriousness in expanding its solar energy capacity. Several more projects are in the pipeline with agreements already signed with various stakeholders, ranging from commercial entities to multilateral development banks for the acceleration of the growth of Azerbaijan's solar energy sector.¹¹

⁸ See: <https://www.euronews.com/green/2024/09/23/now-in-full-control-of-nagorno-karabakh-azerbaijan-wants-to-make-it-a-green-silicon-valley>

⁹ See: <https://www.azernews.az/nation/200476.html>

¹⁰ See: <https://minenergy.gov.az/en/alternativ-ve-berpa-olunan-enerji/azerbaycanda-berpa-olunan-enerji-menbelerinden-istifade>

¹¹ See: <https://cop29.az/en/sustainability/energy-transition-initiatives>

No less important is the prospects of wind power in Azerbaijan. The country has 3 GW of economic potential for onshore wind energy, but its offshore wind resources hold even greater promise, with a technical capacity of 157 GW. Azerbaijan has already taken concrete steps to exploit this potential, with partnerships established with companies like ACWA Power and Masdar to develop large-scale wind energy projects. These partnerships represent Azerbaijan's readiness to expand its renewable energy portfolio and attract international investment in the green energy sector. Azerbaijan's green energy diplomacy means more than just energy independence; it also strives to play a substantial role in the global energy transition to sustainability.

4. Azerbaijani Universities in Climate Action: Substantive or Symbolic Efforts?

Azerbaijani universities have made strides in climate action, particularly in raising awareness within the academic community and broader society. Many institutions, such as Azerbaijan State University of Economics¹² and Baku State University¹³, have taken notable steps to integrate sustainability into their agendas. These universities have organized seminars, workshops, and conferences to address climate-related issues, and some have introduced climate action plans aimed at promoting sustainability within the academic and local communities. Before COP29, climate action initiatives within Azerbaijani universities were limited in scope, often occurring in isolated departments rather than through cohesive institutional strategies. Universities struggled with insufficient collaboration between academia, government, and industry, resulting in shallow engagement rather than transformative climate solutions. The absence of strong partnerships between the academic sector and relevant stakeholders hindered the ability to implement impactful policies.

The COP29 conference served as a turning point, prompting universities to strengthen their climate action plans and engage more actively in global sustainability discussions. However, while some progress has been made in incorporating climate change into curricula and research, substantial academic-industry-government partnerships remain underdeveloped. Without deeper collaboration and a focus on actionable outcomes, universities risk continuing with symbolic measures that do not lead to meaningful environmental change. For Azerbaijani universities to fully contribute to sustainability, they must shift from awareness campaigns to integrative, practical solutions, aligning with national and international climate goals.¹⁴

5. Post-COP29: What Lies Ahead for Azerbaijan's Green Transition?

The COP29 summit played a pivotal role in aligning Azerbaijan's policies with global climate goals, emphasizing sustainable practices across sectors. Hosting COP29 also marked a diplomatic success, enhancing Azerbaijan's visibility on the global climate stage and fostering international partnerships. Despite its commitment to climate solidarity, Azerbaijan faces challenges in aligning rhetoric with actionable results. The country remains highly dependent on oil and gas, which account for over 90% of export revenues and a significant share of GDP.¹⁵ Effective climate action requires more comprehensive financial accountability and meaningful investments. Furthermore, gaps

¹² See: <https://unec.edu.az/en/center-for-sustainability/>

¹³ See: <http://sdg.bsu.edu.az/climate-action-plan-action>

¹⁴ See: <https://www.timeshighered-events.com/impact-climate-forum-2024>

¹⁵ See: https://www.ft.com/content/8ca61260-743a-4e4b-8699-e937a07d7cfc?utm_source=chatgpt.com

in eco-education, limited individual responsibility for water and waste management, and insufficient higher education initiatives highlight systemic challenges. Sustainable progress depends on collaborative scientific, academic, and industrial efforts, underpinned by transparent governance and active civic engagement. Post-COP29 actions require vigilance to guard against greenwashing, where environmental claims lack substance. Real progress will rely on transparent reporting, strong policy implementation, and broad public participation.

6. Conclusion

In conclusion, Azerbaijan stands at a critical juncture in its transition towards a sustainable and green economy. While the country has made notable strides in establishing a green policy framework, including the declaration of 2023-2024 as the "Green Solidarity Year" and ambitious initiatives like the Green Energy Zone and renewable energy projects, there remain substantial challenges to overcome. The duality of its dependence on fossil fuels and its commitments to carbon neutrality necessitates a careful balancing act.

Key to Azerbaijan's success will be the depth and authenticity of its climate actions, ensuring that these are not reduced to symbolic efforts or greenwashing. Azerbaijani universities, though beginning to engage with sustainability more proactively, must accelerate their transition from awareness campaigns to collaborative, research-driven solutions. The involvement of academia, business, and government in a unified, integrated climate strategy will be crucial for achieving real, long-term progress.

Azerbaijan's green energy diplomacy, coupled with its natural resources and strategic partnerships, positions the country as a potential leader in the global energy transition. However, to truly meet its climate goals, Azerbaijan must foster transparency, rigorous environmental policies, and public involvement. Only through sustained, multifaceted efforts can Azerbaijan reconcile its fossil fuel legacy with its green aspirations, ultimately contributing to global sustainability goals while securing its own environmental and economic future.