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Developing Renewable Energy in Azerbaijan and Ukraine

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Introduction

The ongoing global energy crisis has demonstrated the importance of a green transition to ensure long-term energy security and sustainable development. According to the United Nations Environment Programme (UNEP) ¹ “a green economy is defined as low carbon, resource efficient and socially inclusive. In a green economy, growth in employment and income are driven by public and private investment into such economic activities, infrastructure, and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services. In this context, the development of renewable energy sources will play a significant role for nations to diversify energy sources and build their energy policies and strategies towards green development.

In 2023, the International Energy Agency (IEA) ² reported unprecedented growth in global renewable energy capacity, suggesting a potential achievement of a crucial climate target by the decade's end. This surge aligns with Ukraine's commitment to green energy development, a vital component of its national energy strategy within the framework of the EU's Green Deal and collaborative efforts with the USA's energy sector, particularly focusing on the reconstruction of nuclear energy power plants.

The Republic of Azerbaijan also supports sustainable development, and transforming the country into a country of "green growth". According to the Presidential Order on approval of “Azerbaijan 2030: National Priorities for Socio-Economic Development”, the country has set goals to take measures to preserve the environment clean, healthy and sustainable. Given the magnitude of global climate change, emphasis should be placed on the introduction of clean technologies, encouragement of the use of clean energy sources, and recycling and remediation of contaminated areas. This will be an important step in efforts to maintain greenhouse gas emissions at a level that meets international standards³.

¹ <https://www.unep.org/regions/asia-and-pacific/regional-initiatives/supporting-resource-efficiency/green-economy>

² <https://amp.theguardian.com/environment/2024/jan/11/worlds-renewable-energy-capacity-grew-at-record-pace-in-2023?fbclid=IwAR0Hr8XZkfrouMrPPXBq1niJxfXN9sDTTfzblJTCXqXkvskvrYooWi4xRgA>

³ <https://president.az/en/articles/view/50474>

Moreover, the “Law on the Use of Renewable Energy Sources in the Production of Electricity” dated May 31, 2021, defined the field of using renewable energy sources in the production of electricity, the field of activity that includes the production, storage, transmission, supply and consumption of electricity from renewable energy sources. The Azerbaijani government targets to increase the share of the installed capacity of renewable energy to 30% in the country's overall energy balance by 2030⁴.

It should be underlined that after the liberation of Garabagh from Armenian occupation, the liberated territories are being transformed into green energy zones by implementing renewable energy projects to promote power generation from renewable and environmentally sound sources. In this context, Garabagh, East Zangezur and the Nakhchivan Autonomous Republic have been declared “Green Energy Zone”. These regions hold vast potential for renewable energy sources such as hydro, solar, and wind.

Ukraine's role in the global green energy strategy

The Ukrainian Cabinet of Ministers approved the Energy Strategy of Ukraine until 2050⁵ in May 2023, responding to various considerations, including the aftermath of a full-scale war. The strategy emphasizes bolstering energy security, stabilizing the energy system, and integrating Ukraine into the European network of electricity transmission system operators (ENTSO-E). It also accounts for the latest technologies, such as hydrogen production, small modular nuclear reactors, and energy storage facilities. Additionally, the strategy addresses environmental safety in accordance with EU regulations, international obligations on energy efficiency, and the use of renewable energy sources (RES). Furthermore, decentralization of electricity generation across the country is a key aspect, with the ultimate goal of achieving carbon neutrality in Ukraine's energy sector by 2050.

This comprehensive strategy was crafted by the Ministry of Energy with support from the Government of Great Britain and involvement from KPMG. In 2023, Ukraine unveiled the "Build back greener" cooperation program under the United Nations

⁴ <https://e-qanun.az/framework/47842>

⁵ <https://mev.gov.ua/novyna/ukrayina-enerhetychnyy-khab-yevropy-uryad-skhvalyv-enerhetychnu-stratehiyu-do-2050-roku>

Development Programme (UNDP), aimed at revitalizing the decentralized energy sector and expediting the country's transition to green energy⁶.

Ukraine's proactive stance on the global stage was evident at the Global Climate Conference COP28, where the nation aligned with leading countries in supporting the declaration to triple the world's nuclear power capacity by 2050⁷. The strategy's pivotal objective is to position Ukraine as the energy hub of Europe, facilitating the continent's liberation from dependence on Russian fossil fuels through the production of clean energy in Ukraine. This transformation is deemed essential for achieving green transition and climate goals globally⁸. Ukraine's participation in the global green energy strategy involves a multifaceted approach, encompassing national initiatives, international collaborations, and a commitment to shaping the future of energy production in Europe and beyond.

Legislation development for the EU-Ukraine integration

As Ukraine progresses towards EU membership, a pivotal focus lies in aligning our energy sector with the EU's energy markets and security objectives. Affirming Ukraine's commitment, the Minister of Energy emphasized our readiness to provide European partners with sustainable, green electricity, leverage the largest underground gas storages in Europe, explore hydrogen production potential, and contribute to the production of energy equipment, benefiting not only Ukraine's recovery but also facilitating Europe's broader energy transition⁹. The EU has raised its target share of renewable energy sources (RES) in final energy consumption from 32% to 42.5% by 2030, with an additional aspirational increase to 45%¹⁰.

The Verkhovna Rada has endorsed draft law No. 9011-d, regulating the certificates of origin of electricity, specifically emphasizing the generation of green kilowatts. This legislation holds particular importance for projects aiming to export electricity to the EU. Once fully operational, this law will enable the construction of large green plants

⁶ <https://www.kmu.gov.ua/en/news/zeleni-transformatsiia-enerhosektoru-minenerho-i-prohrama-rozvytku-oon-v-ukraini-rozpochynaiut-novu-prohramu-spivpratsi>

⁷ <https://www.kmu.gov.ua/en/news/herman-halushchenko-bez-zbilshennia-potuzhnosti-atomnoi-enerhetyky-nemozhlyvyi-zelenyi-perekhid-ta-dosiagnennia-klimatychnykh-tsilei>

⁸ <https://www.kmu.gov.ua/news/strategiia-maibutnoho-ukraina-tse-enerhetychnyi-khab-iakyi-dopomozhe-ievropi-pozbutysia-zalezhnosti-vid-rosii>

⁹ <https://www.kmu.gov.ua/news/strategiia-maibutnoho-ukraina-tse-enerhetychnyi-khab-iakyi-dopomozhe-ievropi-pozbutysia-zalezhnosti-vid-rosii>

¹⁰ <https://ua-energy.org/uk/posts/andrii-konechenkov-za-dva-roky-viiny-vvedeno-blyzko-230-mvt-vitroheneratsii>

in Ukraine through Power Purchase Agreements (PPA) with Western partners, simplifying financing processes¹¹.

Ukraine's integration into the unified energy system of continental Europe (ENTSO-E) in March 2022 has not only granted absolute independence from Russia and Belarus in the energy consumption system but has also expanded sales markets. Europe, facing an energy deficit, welcomes Ukraine as a surplus country, allowing for the export of electricity—an impetus for our sustainable economic development.

Post-war reconstruction efforts in the Ukrainian energy industry prioritize green energy, with a goal of achieving 50% of electricity generation from RES in the energy balance by 2030. Recognizing the economic and political advantages of RES-generated electricity, the head of UVEA underscores the need to enhance electricity export. The development of cross-border interconnectors is identified as a crucial tool to ensure the flexibility and stable operation of Ukraine's energy system¹².

Bioenergy, hydro, solar, and wind generation, boasting high untapped potential, are envisioned as fundamental pillars of Ukraine's future energy system, contributing up to nearly 80% of total energy generation by 2050. UNECE's pathway scenarios, based on its Carbon Neutrality Toolkit, emphasize the importance of key strategies and investments in tandem with nuclear power to drive Ukraine towards a carbon-neutral future¹³.

Ukrainian laws, aligning with EU Renewable Energy Directives (RED II and RED III), mandate compliance with the CEN EN16325 guarantee of origin standard for the supply of "green" energy within the EU. This crucial rule was incorporated into Ukrainian laws in July 2023¹⁴.

Further emphasizing the commitment to sustainable energy planning, the Ministry of Infrastructure has issued an order for the development of the first municipal and regional energy plans up to 2030 by the end of this year. These plans are essential in shaping the trajectory of Ukraine's energy landscape within the broader context of EU integration¹⁵.

¹¹ <https://forbes.ua/company/lyudi-ne-spriymayut-dtek-yak-oligarkhichnu-strukturu-yak-viyna-zminila-energokompaniyu-rinata-akhmetova-ta-chi-ochikuvati-vidklyuchen-nastupnoi-zimi-velike-intervyu-z-maksimom-timchenkom-24072023-14975>

¹² <https://ua-energy.org/uk/posts/andrii-konechenkov-za-dva-roky-viiny-vvedeno-blyzko-230-mvt-vitroheneratsii>

¹³ <https://unece.org/sustainable-development/press/renewables-could-power-almost-80-ukraines-economy-2050-says-un-report>

¹⁴ https://biz.ligazakon.net/analytcs/224285_maybutn-zeleno-energetiki-v-ukran

¹⁵ <https://enefcities.org.ua/novyny/do-13-lystopada-2024-roku-gromady-povynni-rozrobyty-pershi-mistsevi-energetychni-plan-y-mepy/>

The impact of war on green energy in Ukraine

Approximately 50% of the energy infrastructure in Ukraine suffered extensive damage due to the deliberate actions of Russian occupiers seeking to dismantle the country's energy system. Even green energy, constituting over 13% of the production structure before the conflict, was not spared and had been expanding its capacity. A decade prior to 2022, investments in renewable energy were projected to surpass \$12 billion¹⁶.

The Zaporizhzhia Nuclear Power Plant (NPP), a vital energy source providing 6 GW of power, remains under occupation. Additionally, a Russian terrorist attack resulted in the destruction of the Kakhovka hydroelectric plant¹⁷.

Among the most significant losses in the realm of "green" energy generation is the business empire of R. Akhmetov. Three wind turbines, totaling 500 MW in capacity, are stranded in the occupied territories, representing nearly half of DTEK's total renewable energy facilities, which amount to 1.14 GW. Another major enterprise, the Windcraft Ukraine wind farm in the Kherson region, owned by Swedish businessman Carl Sturen, is also under occupation. Windkraft possesses five turbines with a total capacity of 335 MW, contributing to 21% of Ukraine's overall capacity. Overall, the industry suffered substantial setbacks during the conflict, leading to a more than two-fold decrease in the share of renewable energy sources (RES) in the total electricity production volume. In 2022, this indicator stood at 13.4%, plummeting to 5-6% in the aftermath of the great war. Funding for the industry saw a nearly 50% shortfall during the war year. Although the settlement rate rebounded to 91% at the beginning of 2023, it subsequently experienced a decline in the following months¹⁸.

Renewable energy progress in the liberated territories

Following the successful counteroffensive actions of the Defense Forces of Ukraine in the fall of 2022, substantial areas in the east of the Kharkiv region and the right-bank part of the Kherson region were reclaimed. By the end of 2022, 40% of the

¹⁶ <https://forbes.ua/money/skandal-z-bagatma-nevidomimi-i-zastupnikom-ermaka-chomu-ukraina-viplachuvala-sotni-milyoniv-griven-zelenogo-tarifu-elektrostantsiyam-v-okupatsii-18082023-15507>

¹⁷ <https://www.kmu.gov.ua/news/strategiia-maibutnoho-ukraina-tse-enerhetychnyi-khab-iakyi-dopomozhe-ievropi-pozbutysia-zalezhnosti-vid-rosii>

¹⁸ <https://forbes.ua/money/skandal-z-bagatma-nevidomimi-i-zastupnikom-ermaka-chomu-ukraina-viplachuvala-sotni-milyoniv-griven-zelenogo-tarifu-elektrostantsiyam-v-okupatsii-18082023-15507>

territories in Ukraine, previously occupied by Russia since February 24, had been freed.

During the autumn offensive in the Kharkiv region, approximately 12,000 square kilometers were liberated, including around 500 settlements. In the offensive operation in the Kherson area, roughly 6,000 square kilometers were reclaimed, along with the liberation of more than 200 settlements, as reported by Brigadier General Oleksiy Gromov, Head of the Main Operations Department of the Armed Forces of Ukraine, on December 29, 2022.

In response to the pressing need to address various chronic and war-induced challenges, lawmakers have proposed six draft laws focused on the restoration and green transformation of Ukraine's energy system¹⁹. Efforts to rebuild and initiate the development of solar and wind farms on the reclaimed territories are already underway. In January 2023, the Trifoniv solar power plant (SPP, 10 MW) owned by Rynata Akhmetov's DTEK company resumed operations. Additionally, the first phase of the Tyligul wind power plant (WPP, designed capacity 114 MW) in the Mykolaiv region has been launched²⁰.

The Trifonivska SPP, now liberated from occupiers, is gradually resuming electricity production, meeting the energy needs of settlements in the Kherson region. Currently, the station's green electricity generation volume is below 15% of its installed capacity of 10 MW, with preliminary inspections revealing about 20% damage to solar panels. Furthermore, the distribution system operator, Khersonoblenergo, faces constraints in receiving a larger amount of electricity due to network damage²¹.

In the Mykolayiv region, the initial phase of the Tyligul wind power plant, boasting a capacity of 114 MW with 19 wind turbines, has been inaugurated. According to Hanna Zamazeyeva, the head of the State Agency for Energy Efficiency and Energy Saving, this facility is expected to provide energy to 200,000 households and prevent 400,000 tons of carbon emissions annually. Upon completion of all planned stages, the wind power plant aims to contribute to a reduction of 1.7 million tons of CO₂ emissions per year, ultimately reaching a capacity of 500 MW—the largest in Ukraine and Eastern Europe²².

¹⁹ <https://texty.org.ua/fragments/109722/naskilky-postrazhdala-cherez-vijnu-zelena-enerhetyka-v-ukrayini/>

²⁰ <https://forbes.ua/money/skandal-z-bagatma-nevidomimi-i-zastupnikom-ermaka-chomu-ukraina-viplachuvala-sotni-milyoniv-griven-zelenogo-tarifu-elektrostantsiyam-v-okupatsii-18082023-15507>

²¹ <https://dtek.com/media-center/news/trifonivska-ses-vidnovlyue-generatsiyu-elektroenergii-pislya-deokupatsi/>

²² <https://ecopolitic.com.ua/ua/news/na-mikolaivshhini-zapustili-tyligulsku-vitroelektrostantsiju/>

Azerbaijan's Green Energy Strategy

Azerbaijan Renewable Energy Agency under the Ministry of Energy of the Republic of Azerbaijan was established on September 22, 2020. The country has signed the Paris Agreement on climate change, which set up a goal to reduce greenhouse gas emissions (GHG) by up to 35% by 2030 and 40% by 2050. Towards this end, the country has already started to develop its renewable energy capacity. Azerbaijan's climate conditions offer major potential for electricity generation from solar and wind. Onshore and offshore wind farms/clusters, solar power, and hydro will be major renewable energy sources. Especially, the potential for solar and wind power generation is very significant. The possibilities for wind power development are very strong, especially on the Absheron Peninsula and the Caspian coastline. Overall, the technical potential of renewable energy sources is 135 GW onshore and 157 GW offshore²³, which is an important source for the generation of electricity to support energy transition and sustainable development.

Relevant laws and normative legal acts have been adopted to develop the renewable energy sector, and to improve the legislative and institutional environment in this area. Azerbaijan's national priorities on the implementation and development of renewable energy sources are outlined in the "Azerbaijan 2030: National Priorities on Socio-economic Development" plan. It is worth noting that among the five national priorities, the special attention was given to a clean environment and "green growth". According to this document, in order to better meet the needs of present and future generations, environmentally friendly green technologies must proliferate. Based on scientific and technological potentials, it is necessary in all sectors of the economy to increase the share of alternative and renewable energy sources in primary consumption and reduce their impact on climate change²⁴.

Moreover, the "Law on the Use of Renewable Energy Sources in the Production of Electricity" dated May 31, 2021, makes a special contribution to the development of renewable energy in the country. This law defined the field of using renewable energy sources in the production of electricity, the field of activity that includes the production, storage, transmission, supply, and consumption of electricity from renewable energy sources. The Azerbaijani government targets to increase the share of the installed capacity of renewable energy to 30% in the country's overall energy balance by 2030²⁵.

²³ <https://www.eureporter.co/world/azerbaijan-world/2024/01/04/azerbajians-achievements-in-clean-energy-transition/>

²⁴ <https://president.az/en/articles/view/50474>

²⁵ <https://e-qanun.az/framework/47842>

On July 18, 2022, the European Union and Azerbaijan signed a new “Memorandum of Understanding on a Strategic Partnership in the Field of Energy”, which supports further cooperation in the field of energy efficiency and renewable energy sources. As stated in the MoU, the EU and Azerbaijan share the ambition to accelerate the development and deployment of renewable energy generation and transmission capacity to fully reap the synergies between the EU's clean energy transition and Azerbaijan's strong untapped renewable energy potential, in particular in the offshore energy sector²⁶.

The government is focusing on the development of a long-term energy strategy. This strategy will cover the period until 2050 and will reflect important areas such as electricity and natural gas supply, energy efficiency, and the use of renewables. As is clear from the strategy, the government intends to support a “twin-pillar” approach to promote sustainable energy to achieve its long-term goals. This process will help the country produce electricity using renewable energy sources while decreasing the use of natural gas for electricity production. Increasing the share of renewables in power generation will also decrease greenhouse gas emissions in the country.

Developing renewable energy sources: Post-war progress in the liberated territories

Following the liberation of occupied territories after the Second Karabakh War, the country opened new opportunities for renewable energy in the liberated areas. In recent years, the country has initiated sustainable development in the energy sector through the creation of green energy zones and the gradual process of decarbonization. The key aim is to attract international investment in the green energy sector by providing a high level of protection for foreign investment.

In this context, Garabagh, East Zangezur and the Nakhchivan Autonomous Republic have been declared “Green Energy Zone” (GEZ). The concept aims to provide the area with environmentally friendly green energy by using the existing high renewable energy potential in the liberated territories and to formulate proposals by studying the prospects for the application of environmentally friendly and energy-efficient green technologies. As part of the Green Energy Zone, electricity generation from renewable energy sources, energy efficiency measures, use of electric vehicles,

²⁶ https://ec.europa.eu/commission/presscorner/detail/en/ip_22_4550

installation of renewable energy facilities (especially solar panels) on the roofs of buildings, use of solar energy-based LED lamps in the lighting of streets and roads, use of renewable energy technologies in heating, cooling and hot water supply, application of smart energy management, measures such as waste energy targeted management are designed²⁷.

The use of renewables by different countries varies depending on location as well as regional characteristics. Therefore, the country's plan to use renewable energy extends beyond solar and wind. As the liberated territories have huge potential to develop hydro energy. Restoration and construction of new energy infrastructure in the liberated territories are among the main objectives. The main rivers such as the Tartar, Bazarchay (Bargushadchay), Hakari as well as smaller rivers, have great hydropower potential. To this end, as part of the restoration of power generation capacities with a capacity of 20.2 MW, 4 hydroelectric power plants such as " Gulabird " HPP- 8 MW, "Sugovushan-1" SHPP -4.8 MW, "Sugovushan-2" SHPP -3.0 MW and "Kalbajar - 1" SHPP -4.4 MW were restored in Lachin, Kalbajar and Sugovushan. Moreover, two hydropower plants on the Aras River in the Jabrayil region, with a total capacity of 140 MW for the Azerbaijani side (100 MW "Khudaferin", 40 MW "Giz Galasi") will support green energy in these regions. Overall, the country has already commissioned hydropower stations with a capacity of 170 megawatts²⁸.

In addition to hydropower, the implementation of wind and solar power plants in the liberated territories will significantly contribute to the green energy transition. Karabakh's solar energy potential is estimated at 3,000-4,000 megawatts, and its wind energy potential at 300-500 megawatts. For instance, a wind power plant with an estimated capacity of 100 MW in Lachin/Kalbajar, and 240 MW solar power plant in the Zangilan/Jabrayil regions will make an additional contribution to the creation of a "Green Energy Zone".²⁹ The implementation of all abovementioned projects and ongoing growth will significantly affect the power generation and export potential of the country.

Renewable energy projects in Azerbaijan

The country aims to transform itself into an "energy hub" exporting not only fossil fuels but also green energy. To this end, transforming the country into a "green energy hub" is a key component of Azerbaijan's energy policy. The country closely

²⁷ <https://area.gov.az/en/page/layiheler/yasil-enerji-zonasi/yasil>

²⁸ ibid

²⁹ <https://area.gov.az/en/page/layiheler/yasil-enerji-zonasi/yasil>

cooperates with Saudi-listed ACWA Power, the UAE's clean energy powerhouse, Masdar, BP, and Japanese TEPCO to implement various green energy projects across the country.

Azerbaijan's climate conditions offer major potential for electricity generation from solar and wind. Onshore and offshore wind farms/clusters, solar power, and hydro will be major renewable energy sources. Especially, the potential for solar and wind power generation is very significant. Last year, Azerbaijan opened the 230 MW Garadagh Solar Power Plant, the region's largest operational solar plant. The plant was built by the UAE's global renewables company Masdar at the expense of foreign investment worth \$262 million. The plant will produce 500 million kilowatt-hours of electricity annually, saving 110 million cubic meters of natural gas. At the same time, carbon emissions into the atmosphere will be reduced by 200 thousand tons³⁰.

Moreover, Masdar has signed agreements for solar and onshore wind projects with a total capacity of 1GW in Azerbaijan. The strategic agreements cover the progression of the first phase of a 10 GW pipeline of renewable energy projects in the country, signed in June 2022. Masdar has also signed agreements to develop integrated offshore wind and green hydrogen projects and onshore wind and solar projects with a total combined capacity of 4 GW.³¹

In addition, ACWA Power agreed to develop 500 MW renewable energy projects in Azerbaijan's Nakhchivan Autonomous Republic with Masdar and the State Oil Company of Azerbaijan Republic (SOCAR). ACWA Power signed implementation agreements with the Azerbaijani Ministry of Energy for a 1GW onshore wind farm and a 1.5 GW offshore wind farm with storage. It has an agreement with SOCAR for collaboration and exploration of renewable energy and green hydrogen³².

Touching upon green energy projects, it should be especially underlined the UAE-Azerbaijani energy cooperation. During the recent official visit of the President of the UAE and the ruler of Abu Dhabi Sheikh Mohamed bin Zayed Al Nahyan to Azerbaijan on January 8 and 9, 2024, energy cooperation has been further intensified as two nations signed important documents. The strategic cooperation document covers cooperation and investment opportunities in new areas such as the rooftop solar projects, green hydrogen, green ammonia, synthetic methane, sustainable aviation fuel production and export of green energy, along with 2 GW solar and 2 GW wind

³⁰ <https://area.gov.az/en/page/layiheler/yasil-enerji-zonasi/yasil>

³¹ <https://masdar.ae/en/news/newsroom/masdar-signs-1gw-clean-energy-agreement-in-azerbaijan>

³² [https://www.windpowermonthly.com/article/1848673/acwa-power-masdar-500mw-azerbaijan-cooperation-deal#:~:text=Markets-,ACWA%20Power%20and%20Masdar%20in%20500MW%20Azerbaijan%20cooperation%20deal,of%20Azerbaijan%20Republic%20\(SOCAR\).](https://www.windpowermonthly.com/article/1848673/acwa-power-masdar-500mw-azerbaijan-cooperation-deal#:~:text=Markets-,ACWA%20Power%20and%20Masdar%20in%20500MW%20Azerbaijan%20cooperation%20deal,of%20Azerbaijan%20Republic%20(SOCAR).)

onshore projects, 6 GW offshore wind energy. Calendar of Actions (roadmap) for the construction of 1 GW solar and wind onshore projects to be installed in Azerbaijan reflects the implementation measures of 2 solar and 1 wind energy projects for 2024-2027³³. In essence, all the aforementioned green energy projects will support Azerbaijan's goal of increasing the share of electricity in the installed capacity.

Along with the development of various green energy projects across the country, Azerbaijan also supports inter-regional green energy project. Towards this end, Azerbaijan, Georgia, Romania, and Hungary signed an agreement to support the underwater Black Sea electric cable project to supply electricity from the South Caucasus to Europe. This green energy projects will connect the South Caucasus with South-Eastern Europe, involving the electricity systems of these countries and continental Europe. This project will serve as the "Green Energy Corridor", which can also ensure a green energy supply from Central Asian nations to Europe in the future.

The 29th Conference of Parties (COP29) to the UN Framework Convention on Climate Change in Azerbaijan

The 29th annual United Nations (UN) climate meeting, where governments discuss important climate change issues will take place in Azerbaijan for the first time in the region. Even though the country is rich in fossil fuels, and its energy mix is heavily concentrated in fossil fuels (oil and natural gas), Azerbaijan supports a sustainable energy future and a green economy.

The 2024 was declared "Green World Solidarity Year" in Azerbaijan, and it is an important measure to demonstrate Azerbaijan's commitment to environmental protection and climate action. Azerbaijan's role as a reliable energy partner and responsible member of the international community in the fight against global warming was recognized by many countries, thus the country won the backing from other Eastern European countries to host COP29 in Baku. After COP28 in Dubai, where the parties agreed on the "loss and damage" fund that could start handing out money. Also, discussions continued on setting a 'new collective quantified goal on climate finance' in 2024, taking into account the needs and priorities of developing countries. The new goal, which will start from a baseline of USD 100 billion per year, will be a building block for the design and subsequent implementation of national climate plans that need to be delivered by 2025³⁴. COP29 in Baku will be an

³³ <https://www.eurasiareview.com/16012024-azerbaijan-and-the-united-arab-emirates-are-fostering-bilateral-ties-opened/>

³⁴ <https://unfccc.int/news/cop28-agreement-signals-beginning-of-the-end-of-the-fossil-fuel-era>

important platform to support international cooperation to act on climate change, implement the Paris commitments, and focus on long-term goals. Baku may put important topics such as environmental threats of war and landmine threats on COP29 agenda as the country suffers from environmental degradation and landmine contamination following the Armenian occupation.

Conclusion

The global energy crisis has demonstrated the importance of a cleaner and more secure energy future. Also, the ongoing Russia-Ukraine war and the former war between Azerbaijan and Armenia showed that environmental degradation and landmine contamination are serious threats to sustainable development. The environmental impact of war is a serious challenge as fuels greenhouse gas emissions, pollution, soil, biodiversity loss destroys the ecosystem. In addition, the post-conflict clearance of landmines and explosive remnants of war led to soil degradation and localized pollution. Considering all these, COP29 in Baku will be the right momentum for parties to discuss the environmental impacts of conflicts, and how to prevent further environmental degradation.

Despite all the challenges posed by the wars, Ukraine and Azerbaijan support sustainable development and green energy across their countries. In Ukraine, approximately 17% of all electricity is still generated from renewable sources, with wind power plants accounting for 107 MW and solar power plants contributing nearly half, at 91 MW, in the new generation for 2023. Volodymyr Kudrytskyi, the director of Ukrenergo, underscores the necessity of creating conditions for the emergence of hundreds of small power plants, each with a capacity of 10 MW, to support the specific characteristics of wind and solar electricity generation.³⁵ The primary obstacle hindering the advancement of green energy in the liberated territories areas is the security concern associated with the proximity of the combat zone, extending several tens of kilometers.

Azerbaijan's green energy strategy targets the diversification of energy resources and supplies. To be clear, the country wants to increase the share of renewable energy in its energy mix. This will help the country to save natural gas in power generation, and simultaneously, increase the export of gas and electricity to European energy markets. This strategy will also help the country to meet Paris CO2 mitigation pledges.

³⁵ <https://www.epravda.com.ua/columns/2023/12/26/708108/>

Summing up, both Azerbaijan and Ukraine have huge potential to develop renewable energy sources, and future cooperation between these countries can support broader the Black Sea-Caspian Sea energy cooperation, which is crucial for Europe's long-term energy security. To this end, Azerbaijan, Georgia, Romania, and Hungary have already started inter-regional green energy cooperation by supporting the Black Sea electric cable project, which will supply electricity to Europe, including Moldova, the Western Balkans, and Ukraine.

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