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Climate Disasters, Geopolitics, and Regional Resilience: The European Union's Role in Central Asia

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Abstract

This article examines the European Union's (EU) engagement with Central Asia in the field of climate disaster management and environmental cooperation. Against the backdrop of intensifying climate risks like glacier melt, desertification, floods, and water scarcity, Central Asia has become a critical testing ground for regional resilience and global environmental governance. The EU has emerged as a constructive but constrained actor: its initiatives emphasize governance, capacity building, and multilateral dialogue rather than large-scale infrastructure financing. Drawing on a review of climate data, the EU policy frameworks, and comparative engagement by China and Russia, the study highlights how climate cooperation functions both as a pragmatic policy area and as a subtle geopolitical tool. While the EU faces significant challenges including limited financial leverage and authoritarian governance contexts, it retains a unique niche by promoting sustainable governance and transboundary cooperation. The findings suggest that climate disasters are not merely environmental challenges but also opportunities to strengthen EU-Central Asia partnerships. Policy recommendations are advanced for scaling up financing, deepening renewable energy cooperation, prioritizing transboundary water governance, and embedding climate security into the regional agenda.

Keywords: European Union, Central Asia, Climate Disasters, Climate Security, Renewable Energy, Geopolitics, Regional Integration

Introduction

In the 21st century, climate change has emerged as one of the major security and economic challenges to the world. Rising temperatures along

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with melting glaciers, desertification, and extreme weather have impacted human behaviors. Central Asia is one of the climate-hit regions that is facing challenges as a result of climatic changes. Depletion of glaciers and scarcity of water have given rise not only to interstate tensions but inter-society conflicts as well. Aral Sea disaster, one of the biggest manmade disasters, has direct impacts on the social, economic, and political security of the region.

Moreover, great powers politics has brought challenges as well opportunities for the Central Asian republics in the field of climate change. The European Union (EU) has been advocating preservation of environment and protection of climate for decades. The EU's green diplomacy is rooted in initiatives like "Green Deal" and "Paris Agreement", which have identified Central Asia as an area of strategic importance.

Central Asia: A Region at the Crossroads

Environmental challenges to Central Asia are continuously growing. Besides shrinking of Aral Sea, glacial melting in Tian Shan and Pamir regions have negative impacts on the water management. Aral Sea shrunk due to Soviet agricultural policies which diverted the water from two major rivers of Central Asia, Syr Darya, and Amu Darya, to deserts and for cotton cultivation. Such disasters have given birth to water crises in Central Asian region after the independence.

This article analyses the EU's role in mitigating the climate disasters in Central Asia. The article tries to address the questions like; how does the EU cooperate with Central Asia in climate governance? What are the challenges and opportunities for the EU's climate diplomacy in the region? And how this cooperation can further be strengthened? The article is divided into different parts. The first part discusses the theoretical framework and research methodology. The second part explains the climatic changes and their impacts on Central Asia. The third part talks about the EU's initiatives to mitigate the climate challenges in the region. And the last part gives recommendations for the future course of action.

Theoretical Framework

Three theories have been applied to this research. They are Liberal Institutionalism, Constructivism, and Climate Security Theory. Liberal Institutionalism focuses on international institutions, rules, and cooperation

to resolve the common issues. Climate change and its impacts is a global phenomenon, and single country cannot handle these challenges. Therefore, a collective effort is required to mitigate the climatic challenges. In order to mitigate the environmental challenges in Central Asia, collective efforts by regional and global institutions are required. According to Rober Kohaene, institutions provide information, reduce expenses, and develop mutual trust.[1] The EU's involvement in Central Asia reflects its commitment to mitigate the climatic challenges with a collective approach.

Constructivism talks about the principles, identity, norms, and discourses. The EU's support to Central Asian states is not confined to technical assistance but it also focuses on the sustainable development, good governance, and multilateralism.[2] "Green Deal" and "Just Transition" are two major initiatives of the EU to bring CARs into the global climate governance initiative.

Climate security studies link environmental stress to conflict and instability. Migration, unrest, or geopolitical conflicts are directly associated with conflict emanating from climate change in Central Asia. The EU's climate initiatives are to resolve or manage these challenges.

The study employs qualitative research design with a focus on document analysis, case studies, and secondary data integration. The EU–Central Asia Strategy (2019), Global Gateway Strategy (2021), and climate-focused communications from the European External Action Service (EEAS) have been utilized for deeper understanding of the EU's strategies. Other sources include Central Asian national adaptation strategies and regional agreements on water and energy. A few case studies like renewable energy initiatives in Kazakhstan, Aral Sea Basin programme, and capacity building in Kyrgyzstan have been discussed. Triangulation helped in analysing the data. It tries to analyse whether the EU's institutional intervention has strengthened the regional efforts to mitigate climate challenges or not. The constructivist perspective lays emphasis on how the EU climate norms were

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[1] Barry Buzan Book review on Robert Keohane. *After Hegemony: Cooperation and Discord in World Political Economy. After Hegemony: Cooperation and Discord in the World Political* (1984) in *International Affairs* 61, No. 2 (1985). https://doi.org/10.2307/2617490.

[2] Ian Manners, "Normative Power Europe: A Contradiction in Terms?" *Journal of Common Market Studies* 40, No. 2 (2002): 235–258. https://www.princeton.edu/~amoravcs/library/mannersnormativepower.pdf.

framed, received, and adapted by the Central Asian governments. From a climate security perspective, the question was whether the EU engagement contributed to resilience, reduced vulnerabilities, or addressed migration and conflict risks linked to disasters.

Central Asia's Vulnerability to Climate Disasters

The geographical location along with the dry weather and arid climate has made Central Asia vulnerable to climatic changes. Three major challenges are face by the region: industrial and agricultural initiatives under the Soviet rule, intensifying climatic changes, and limited capacity to mitigate the climatic challenges.[3] Tian Shan Mountain glaciers provide 60-80 percent of fresh water to the regional states. These glaciers are rapidly depleting. It is expected that by 2050, 30-50 percent of these glaciers will disappear.[4] Moreover, the average temperature in the region has risen to up to 1.5-2 degrees during the last 80 years.[5] Such negative developments have adversely affected the availability of fresh drinking water, agriculture, and hydroelectric power input of the region. Furthermore, changing weather patterns have disturbed the rainfall thus distressing the agriculture in the region.

Southern and western parts of Kazakhstan are facing frequent droughts, resulting in the migration as well as loss of cattle to the farmers. "More than 75 percent of agricultural land is subject to degradation, and 62.5 percent of arable soils are low in essential nutrients."[6]

The population living in these areas is facing desertification. Kyrgyzstan and Tajikistan are facing glacial melting resulting in frequent floods which destroy arable lands and hydroelectricity facilities. Uzbekistan inherited a mono-crop culture of cotton production from the Soviet Union. An over reliance on Amu and Syr rivers for cotton cultivation has resulted in the

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[3] Erika Weinthal. *State Making and Environmental Cooperation: Linking Domestic and International Politics in Central Asia* (Cambridge, MA: MIT Press, 2002).

[4] "By the Numbers: Climate Change in Central Asia", *Asian Development Bank*. https://www.adb.org/news/features/numbers-climate-change-central-asia.

[5] Rebecca Lindsey and LuAnn Dahlman. "Climate Change: Global Temperature". https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature.

[6] Ekaterina Venkina. "More than three quarters of agricultural land is susceptible to degradation.", *Eurasianet*, 16 December 2024. https://eurasianet.org/kazakhstan-grappling-with-desertification.

drastic shrinking of the Aral Sea.[7] Once the fourth largest lake in the world, the Aral Sea has, today, has shrunk to 10 percent of its original size. Turkmenistan also faces desertification. Karakum desert is expanding continuously. Inland migration in Turkmenistan has increased while rural economy is under severe stress.

Key Climate Stresses

Following are the major climate stresses in Central Asia:

Glacial Melting

Both Tian Shan and Pamir glaciers are the source of fresh water for around the 80 million population of Central Asia.[8] It has also reduced the availability of water during the summers which has resulted in the decreased agricultural production in Tajikistan and Kyrgyzstan. Around 70 percent of the Central Asian arable lands are depleting.[9] Salinity has forced rural population to migrate.

Droughts

Frequent droughts have reduced the grain production in the region. 2000, 2008, 2014, and 2021 droughts impacted the wheat harvesting in Kazakhstan. It had to import food due to loss of indigenous harvesting.

Social, Economic and Political Impacts

Environmental disasters in Central Asia are also linked with governance, security, and economic dependence. Around 10-25 percent of GDP in Kyrgyzstan, Tajikistan, and Uzbekistan is dependent on agriculture.[10] The environmental changes have stressed this sector. States are unable to deal

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[7] "World of Change: Shrinking of Aral Sea", *NASA*, https://earthobservatory.nasa.gov/world-of-change/AralSea.

[8] Martina Brandun *et al.* "The State and Future of the Cryosphere in Central Asia", *Water Security* 1, (December 2022). https://www.sciencedirect.com/science/article/pii/S2468312420300122.

[9] Ava Janelle Leonard. "War in Kyrgyzstan and Tajikistan: Freshwater Scarcity and the Path to Peace", Student Thesis, (Fordham University, 2025). https://research.library.fordham.edu/cgi/viewcontent.cgi?article=1208&context =environ_2015.

[10] Yi Qin, Jiawen He, Miao Wei and Xixi Du. "Challenges Threatening Agricultural Sustainability in Central Asia: Status and Prospects", *International Journal of Environmental Research and Public Health* 9, No. 10 (May 2022). https://www.researchgate.net/publication/360741583_Challenges_Threatening_Agricultural_Sustainability_in_Central_Asia_Status_and_Prospect.

with these challenges due to lack of resources and modern techniques.[11] Hence, cooperation with the external bodies is seen as one of the major remedial actions.

Scarcity of water has given rise to inter-state tensions. Due to non-availability of hydrocarbons and tough mountainous terrain, the upstream countries like Tajikistan and Kyrgyzstan prefer production of hydroelectricity. While downstream countries like Turkmenistan and Uzbekistan heavily rely on glacial water for their irrigation. Droughts intensify these tensions among the regional states.[12] Climatic changes have exacerbated such tensions, and water has become a source of permanent conflict in the region.

Strategic Significance of Central Asia for the EU

Central Asia has long been considered a "peripheral" region for the EU compared to its neighborhood in the Balkans, Eastern Europe, and the Mediterranean. Yet, climate change elevates the strategic significance of the region. Kazakhstan's renewables and hydrogen potential make it a partner in Europe's diversification away from Russian fossil fuels. As the Aral Sea catastrophe illustrates, Central Asia's environmental mismanagement has global resonance. The EU is also concerned with possible migration to Europe and Russia due to climatic changes and environmental disasters in Central Asia. Climate related disasters can exacerbate instability, creating openings for extremist groups, transnational crime, and external manipulation. Thus, climate cooperation is not only a humanitarian imperative but also a strategic investment in regional stability and EU security interests.

EU's Engagement in Central Asia: Institutions, Programs, and Priorities

The EU has actively been engaged in the Central Asian region since the latter's independence in the early 1990s. Due to its immense natural resources, particularly hydrocarbons, geo-strategic location, and growing

[11] Selina Angelinia. "Environmental Issues in Central Asia", *Venice International University* URL: https://www.univiu.org/images/stories/TEN/publications/papers/2010/07.10_Angelini.pdf.

[12] Albina Prniyazova, Suriya Turaeva, Daniyar Turgunov, and Ben Jarihani. "Sustainable Transboundary Water Governance in Central Asia: Challenges, Conflicts, and Regional Cooperation", *Sustainability* 17, Issue 11 (May 2025). https://doi.org/10.3390/su17114968.

security position, it has got a significant place in the EU's foreign policy. Besides supporting the institution building and promotion of democracy, the EU has significantly invested to protect the environment of Central Asia.[13] The EU's support to Central Asia in the fields of green energy, alternative, and renewable sources of energy is commendable.

The EU's Central Asia strategies of 2007 and 2019 have explicitly identified climatic changes and environmental protection as the core pillars.[14] The European Green Deal project of 2019 is one the major initiatives of the EU in this regard. The EU wants to achieve three major objectives through environment and climate programmes in Central Asia: to resolve the fundamental reasons for the water conflict, strengthening governance through regulatory and institutional reforms, and use of soft power in the wake of geopolitical developments in the region.

Institutional Framework for Cooperation

There are several formal and informal mechanisms on which the EU-Central Asia dialogue is based. For example, the EU-Central Asia Strategy (2019) is a policy framework for cooperation, highlighting resilience, prosperity, and regional cooperation.[15] The EU-Central Asia High-Level Political and Security Dialogue is an initiative through which regular meetings are conducted addressing security, environment, and water issues. Furthermore, the EU-Central Asia Ministerial Meetings have annual consultations where climate resilience is increasingly prioritized. Moreover, bilateral Partnership and Cooperation Agreements (PCAs) is a mechanism of individual agreements with Central Asian states for environmental cooperation. Financing for sustainable development and environment-related projects is done through Regional Programs under the Development Cooperation Instrument (DCI).

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[13] European Parliament, "Central Asia", *Fact Sheet on the European Union*, https://www.europarl. europa.eu/factsheets/en/sheet/178/central-asia.

[14] "Joint Communication to the European Parliament and the Council the EU and Central Asia: New Opportunities for a Stronger Partnership", (2019). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019JC0009.

[15] Rosamund Shreeves, Angelos Delivorias and Anna Caprile. "The EU strategy on Central Asia: Towards a new momentum?", *European Parliamentary Research Service* (April 2024). https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/762300/EPRS_BRI(2024) 762300_EN.pdf.

EU's Central Asia Programmes

The EU under Preservation of Aral Sea Programme contributes for the reforestation of the dried seabed. This is a contribution to the UNDP and World Bank's International Fund for Saving the Aral Sea.[16]

Under Renewable Energy and Green Economy Initiatives, the EU supports renewable energy projects in Central Asia. Kazakhstan, having a good capacity of wind and solar energy, has been closely working with the EU in this regard. Feasibility study for solar plants and grid integration has been done under the EU-Kazakhstan Enhanced Partnership Agreement.[17] The EU also supports programmes like "Switch Asia" for the sustainable production and consumption.[18]

Education and Capacity Building programme of the EU helps Central Asian students to get scholarships in environmental sciences and engineering domain. One of the major initiatives is Erasmus scholarship. More than 4000 students have participated under the EU's initiatives to strengthen human capital for climate resilience.[19] The EU also funds technical training of the professional experts in the renewable energy sector from Kyrgyzstan and Uzbekistan. Around 15-20 percent funds were allocated for environment and climate related programmes during 2014-2020 under the €1.1 billion in Development Cooperation Instrument fund.[20]

Policy Priorities and Strategic Framing

The EU has three major objectives regarding climate change in Central Asia: reduce tensions over Amu and Syr Darya and support regional dialogue, promoting renewables, increasing efficiency and gradual decarbonization,

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[16] "Green Aral Sea Project", *UNDP.* https://www.undp.org/uzbekistan/green-aral-sea.

[17] "EU-Kazakhstan Relations", in https://www.eeas.europa.eu/sites/default/files/documents/2023/EEAS-%20FACTSHEET-Kazakhstann_October2023.pdf.

[18] "Supporting Sustainable Consumption and Production (SCP) - Launch of the EU SWITCH-Asia Programme in Central Asia", 7 January 2019, *The Diplomatic Services of European Union*. https://www.eeas.europa.eu/node/64882_en.

[19] "Capacity Building for Higher Education", *Erasmus+ EU Programme for Education, Training, Youth and Sport*, https://erasmus-plus.ec.europa.eu/opportunities/opportunities-for-organisations/cooperation-among-organisations-and-institutions/capacity-building-higher-education.

[20] Visit at https://www.eca.europa.eu/lists/ecadocuments/sr22_09/sr_climate-mainstreaming_en.pdf.

and supporting capacity for early warning systems, disaster preparedness, and climate-resilient infrastructure.[21]

The EU's achievements in Central Asia include strengthening technical capacity in water management, promoting regional dialogue platforms otherwise absent in the geopolitical landscape, and advancing pilot renewable projects and education exchanges. Nevertheless, there has been challenges to EU in implementation of its projects. The EU projects are often small pilot initiatives, insufficient to address systemic challenges. Furthermore, dependence on local political will is also a major hindrance. The Central Asian regimes may adopt the EU language without implementing reforms. Moreover, China's massive investments in infrastructure financially overshadow the EU initiatives.[22] Thus, while the EU has carved out a normative niche, its impact is constrained by financial limits and regional politics.

Geopolitical Perspectives: The European Union, China, Russia, and Competing Climate Agendas

Central Asia is located at the strategic crossroads of Europe, Russia, China, and South Asia. Abundant energy resources, transport corridors, and water resources make it an important competitive arena. While Russia and China remain the dominant external actors in the region, the European Union has taken a more normative and governance-oriented role, using climate cooperation as an instrument of soft power.

For the EU, the commitment is less about real security and more about strengthening resilience, governance, and sustainability. This is a bit different from China's economic policies under the Belt and Road Initiative (BRI) and Russia's security-first approach, which is rooted in its historical sphere of influence. Historically, Russia has viewed Central Asia as its near abroad. It continues to exert influence through Collective Security Treaty Organization (CSTO) and bilateral defense agreements. Furthermore, the

[21] "Partnering for a Sustainable Future: EU-Central Asia Cooperation on Water, Energy, Climate, and Digitalisation", *The Diplomatic Service of the European Union*, 18 February 2025. https://www.eeas.europa.eu/eeas/partnering-sustainable-future-eu-central-asia-cooperation-water-energy-climate-and-digitalisation_en.

[22] Sylvie Bermann and Elvire Fabry. "EU and China between De-Risking and Cooperation: Scenarios by 2035", *Jacques Delors Institute*, (November 2023). https://institutdelors.eu/content/uploads/2025/04/R126-UE-Chine-Fabry_EN_Full_13.pdf.

Eurasian Economic Union (EAEU), which includes Kazakhstan and Kyrgyzstan, is also a mechanism to preserve Moscow's influence in the Central Asian region.

Traditionally net controllers, Gazprom and Rosneft remain key players in the gas pipeline market. Similarly, Russia sometimes mediates hydropower and irrigation disputes between upstream (Kyrgyzstan, Tajikistan) and downstream states (Kazakhstan, Uzbekistan, Turkmenistan). Unlike the EU, Russia does not see environmental issues as governance reforms but rather links technical or resource management issues to broader themes of regional stability. Limited investment in renewable energy projects means it has the least impact on Central Asia in this domain.

Under the BRI project, China has invested multibillion dollars in the energy and infrastructure development projects of Central Asia. Around $40 billion have been invested by China in Central Asia to support such projects.[23] Regarding climate cooperation, China recently rebranded part of the BRI initiative as the "Green BRI," pledging to end foreign financing for coal and support renewable energy projects.[24] Although, Chinese companies still use coal in different projects in the region, Beijing under BRI has supported Kazakhstan and Uzbekistan to complete the renewable energy projects. China is least involved in the management of regional water distribution because it also has minor issues of water distribution with its western neighboring states.

China's comparative advantage lies in its financial capabilities. Unlike the EU, which funds small pilot projects, China finances large-scale infrastructure, ensuring its clear and visible presence. However, China's climate framework is pragmatic and focuses on energy diversification rather than governance or civil society involvement.

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[23] Christoph Nedopil Wang, "China Belt and Road Initiative (BRI) investment report 2025 H1", *Green Finance and Development Center, (*17 July 2025). https://greenfdc.org/china-belt-and-road-initiative-bri-investment-report-2025-h1/.

[24] For details see Akasha Kumar, "The Green Silk Road: A Critical Analysis of China's Science Diplomacy as a Tool for Global Influence", Seoul: *IPSA World Congress Conference*, July 2025. https://www.researchgate.net/ publication/396049880_The_Green_Silk_Road_A_Critical_Analysis_of_China's_Science_Diplomacy_as_a_Tool_for_Global_Influence.

The EU presents an alternative to Russian security and Chinese infrastructure models in Central Asia. The EU's regulatory framework gives importance to sustainable development, reforms, and climate change and its impacts in Central Asia. Contrary to mega projects, the EU invests into trainings, providing dialogue platforms and funding to pilot programmes of renewable energy. This is done with the deep involvement of civil society. The EU's climate programmes often involve non-governmental organisations, universities, and local communities which are ignored by Russia and China in their model of development. This approach positions the EU as "business as usual" in Central Asia, exporting its standards in environmental management and renewable energy.[25]

Points of Convergence and Divergence

All these powers involved in Central Asia have multifold interests which converge as well as diverge. Both China and the EU have invested into the renewable energy projects in Central Asia. All the three actors including Russia realise that water scarcity and environmental changes particularly extreme weather are a real threat to the security of the region. Although they have divergence of interests, yet, all three are engaged in the modernisation of the old Soviet infrastructure in Central Asia.

Simultaneously, they have diverging interests as well. The EU focuses on governance, transparency, and reforms while China and Russia are interested in bilateral agreements. China gives loans in billions while the EU's support to these states is limited, leaving little room for the EU to have influence over decision making. Furthermore, the EU is committed to environmental protection while Russia takes less interests in this domain. Similarly, the EU involves local communities and civil society in its programmes while Russia and China engage the top leadership.

Local Perception of External Actors

The Central Asian states have different kinds of engagements with these actors. For example, Kazakhstan has deep engagement with all the three countries. Uzbekistan seeks technical assistance from the EU in order to

[25] "Areas for further EU – Central Asia cooperation" in Niels Drost, Giulia Cretti & Babette van Giersbergen, *Central Asia Emerging from the Shadows: European Union – Central Asia Relations in Evolving Eurasian Geopolitics*, (January 2025). https://www.clingendael.org/pub/2025/central-asia-emerging-from-the-shadows/10-areas-for-further-eu--central-asia-cooperation/.

introduce reforms but is closer to China and Russia for its infrastructure development. China is the largest trade partner as well as an external investor in Kyrgyzstan and Tajikistan. However, both are dependent on Russia for their security. At the same time, both work closer with the EU for their water management and preservation programmes. Turkmenistan, while practicing permanent neutral foreign policy, is open to the EU for technical support.

Central Asian leadership considers the EU's programmes as small scale but significant. They view China as economically unavoidable and Russia as a traditional security provider. Nevertheless, the EU is popular among all Central Asian states in terms of climate governance.[26]

Impacts of Climate Diplomacy

Geopolitical realities of the region provide the EU a room for climate governance. Since the EU is not involved in the hardcore geopolitics of the region, it should be involved in better governance and sustainable development in the region. Russia being the former colonial power and "net security" provider has limited involvement in climate governance thus providing an opportunity to the EU to fill this gap. China's Green BRI initiative can be complimented by the EU's climate governance. Balancing the external challenges is a difficult and tricky task for the Central Asian states. Nevertheless, their diplomatic skills have hitherto been successful in this regard.

Kazakhstan: Renewable Energy Transition and EU Contributions

Kazakhstan, Central Asia's largest and richest country, has long relied on oil, gas, and coal, which account for more than 60% of its exports. At the same time, the country faces serious climate challenges: desertification threatens nearly 66% of its territory, and the melting of glaciers threatens water supplies for agriculture and industry.[27] The European Union has selected Kazakhstan as an important partner in the development of renewable energy. As part of the Enhanced Partnership and Cooperation Agreement (EPCA) signed in 2015, Brussels is committed to supporting energy

[26] "Central Asia", *Fact Sheet on the European Union*, https://www.europarl.europa.eu/factsheets/en/ sheet/178/central-asia.

[27] Carol Dahl and Karlygash Kuralbayeva. "Energy and the environment in Kazakhstan", *Fuel and Energy* 26, No. 6 (May 2001): 429-440. doi.org10.1016/S0301-4215(00)00137-3.

diversification and environmental sustainability.[28] Between 2017 and 2022, the EU institutions supported more than €250 million worth of solar and wind projects, including the EBRD-supported 100 MW Solar Power Plant to Kazakhstan.[29]

The EU programs such as EU4Energy provide technical expertise, regulatory reform, and energy efficiency training for government officials. Kazakhstan's green economy concept of 2013 has been partly shaped by the EU advice, with Brussels encouraging the use of green bonds and emissions trading schemes.[30] Kazakhstan's leadership, particularly under President Kassym Jomart Tokayev, has recognized climate cooperation as part of its strategic modernization agenda. In 2020, the country committed to becoming carbon neutral by 2060, which was welcomed by the European Union. But challenges remain; fossil fuel subsidies, industrial interests and political reluctance to adopt rapid reforms.[31] The EU's influence is most visible here in institutional reforms and financing models, positioning Kazakhstan as a potential regional leader in renewable energy.

Uzbekistan: Water Management and Energy Efficiency

Uzbekistan presents a different picture. It is Central Asia's most populous state, with a population of over 35 million. It has suffered from decades of cotton monoculture and severe water scarcity due to the drying up of the Aral Sea. The environmental disaster of the Aral Sea, where water volume has declined by 90 percent since the 1960s, remains a symbol of unsustainable Soviet-era policies.[32] Since President Shaukat Mirziyoyev's reforms began in 2016, Uzbekistan has opened the way for international cooperation, including EU engagement on the environment. The European Union has focused on two main areas. The EU-funded projects under the

[28] "The European Union and Kazakhstan", *The Diplomatic Services of European Union*, 19 October 2023. https://www.eeas.europa.eu/kazakhstan/european-union-and-kazakhstan_en?s=222.

[29] Ibid.

[30] "Kazakhstan's Transition to Green Economy: A Stocktaking Report" *Partnership for Action on Green Economy,* 2020. https://admin.un-page.org/wp-content/uploads/2023/04/2020-kazakhstan-stocktaking-report-en.pdf.

[31] Sebastien Peyrouse. *Kazakhstan: Strategies for Development and Climate Challenges* (Washington, DC: Central Asia Program, 2020).

[32] Kristopher D. White. "Nature – Society Linkages in the Aral Sea Region", *Journal of Eurasian Studies* 4, Issue 1 (January 2014). DOI: https://doi.org/10.1016/j.euras.2012.10.003.

Sustainable Use of Water Resources Program in Rural Uzbekistan worth €15 million for the period 2016-2022 have provided innovative irrigation technology, training for farmers, and regional water dialogue platforms.[33] The EU-AGRIN project and the UNDP-EU collaboration have introduced energy-saving technologies in housing and agriculture, reducing resource consumption. The EU contribution to Uzbekistan is notable for the involvement of the local community.[34] Farmers associations, non-governmental organizations, and educational institutions are directly involved in the implementation of the programme.[35] Despite of this progress, challenges like controlled political structure and corruption may damage these projects.

Kyrgyzstan: Disaster Preparedness and Community Resilience

Kyrgyzstan, a small mountainous country, faces some of the greatest climate risks in the region. More than 90% of its territory is mountainous, making it extremely vulnerable to glaciers, floods, and landslides. Between 1990 and 2020, Kyrgyzstan experienced more than 200 major natural disasters, causing damages worth more than $1 billion.[36] The EU engagement in Kyrgyzstan focuses on disaster preparedness, resilience, and water management.

Under the Disaster Preparedness ECHO Programme, the EU invested more than €20 million between 2009 and 2020 to strengthen early warning systems, emergency response capacity, and disaster education in schools. Kyrgyzstan, as an upstream country, plays a key role in regional hydropower. The EU projects support dialogue with downstream neighbours, promoting joint management of river basins. Unlike in Kazakhstan and Uzbekistan, the EU projects in Kyrgyzstan rely heavily on local NGOs and community organisations to conduct training and awareness-raising campaigns.

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[33] "Sustainable Management of Water Resources in Rural Areas in Uzbekistan: Technical Capacity Building", https://www.eeas.europa.eu/node/55145_en.

[34] "UN and UNDP Strengthen Agricultural Innovation Groups in Uzbekistan", *UNDP*, 17 September 2025. https://www.undp.org/uzbekistan/press-releases/eu-and-undp-strengthen-agricultural-innovation-groups-uzbekistan.

[35] Ibid.

[36] "Climate Risk Country Profile: Kyrgyz Republic", *World Bank*, 2020. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-06/15814-WB_Kyrgyz%20Republic%20Country%20Profile-WEB.pdf.

Kyrgyzstan's relatively open political system allows the EU to engage with civil society more closely than in neighbouring countries. This bottom-up approach helps to build community-level resilience where disasters directly impact livelihoods. However, the country's chronic political instability and frequent changes of government pose challenges for long-term cooperation. The EU projects must adapt to constantly changing national priorities.

Tajikistan: Glacial Vulnerability and Hydropower Dependence

Tajikistan, home to some of the highest glaciated mountains in Central Asia, faces acute climate risks. Up to 90% of the country's electricity comes from hydropower, making it highly dependent on stable water flows. Rapid glacial melt has led to unstable seasonal water availability, increasing both drought and flood risks. EU engagement in Tajikistan has largely focused on hydrological monitoring, early-warning systems, and institutional capacity building. Through EU-funded projects under the Border Management Programme in Central Asia (BOMCA) and Caucasus-Mongolia-Central Asia (CAMCA) frameworks, Tajik authorities have received training on disaster risk management and cross-border water-sharing protocols. However, governance limitations and weak infrastructure remain critical challenges[37].

Turkmenistan: Desertification, Water Stress, and Limited Engagement

Turkmenistan faces severe desertification, with the Karakum Desert expanding and placing agricultural regions under immense pressure. The country also struggles with water scarcity, particularly due to inefficient irrigation practices and dependence on the Amu Darya. EU engagement in Turkmenistan has been more limited compared to other Central Asian states due to its closed political environment[38]. Nevertheless, targeted technical cooperation has taken place through programs on sustainable agriculture, water efficiency, and environmental monitoring. The EU's soft-engagement approach aims to avoid political sensitivities while still contributing to long-term environmental resilience.

[37] ICMPD. "EU-Funded BOMCA 10 Completes 10th Phase, Strengthening Regional Cooperation, https://www.icmpd.org/news/eu-funded-bomca-10-completes-10th-phase-strengthening-regional-cooperation.

[38] EU-Turkmenistan relations, https://www.eeas.europa.eu/sites/default/files/documents/EEAS-CA%20MINISTERIAL%20FACTSHEETS-2022-Turkmenistan_31Oct.pdf.

The European Union's comparative advantage: standards and governance

Evidence from Kazakhstan, Uzbekistan and Kyrgyzstan suggests that the EU's unique value lies not in the size of its financial impact, but in its ability to promote governance-based climate solutions. As China builds massive infrastructure and Russia secures gas pipelines, the EU is integrating climate cooperation into broader discussions about resilience, sustainable development, and inclusive governance. This EU approach resonates in Central Asia, where the legacy of the Soviet planned economy has left environmental institutions weak. By offering training, legal reforms, and technical expertise, the EU fills a niche that is complementary rather than competitive with other external actors.

However, the EU's reliance on soft power and technical assistance also exposes it to criticism, being accused a "small player" compared to large-scale Chinese loans or Russia's protective umbrella. Nevertheless, climate disasters represent a challenge to security and development. Climate disasters in Central Asia are not just an environmental phenomenon but are deeply linked to food security, migration, and regional stability. For example, desertification and droughts have threatened wheat production, a key export in Kazakhstan. Similarly, Uzbekistan's water scarcity is fueling competition between the regions and creating potential tensions with downstream neighbours. Floods and landslides regularly destroy infrastructure in Kyrgyzstan, causing economic and social disruption.

By viewing disasters as a "risk-on", the EU is aligning climate cooperation with its integrated approach to external conflicts and crises. Such a framework strengthens the EU's legitimacy in the region, while avoiding overt securitisation that could discourage sensitivity to the sovereignty of local governments. Central Asian states are selectively adapting the EU climate standards. Kazakhstan has partially adopted European renewable energy standards but fossil fuel subsidies remain[39]. While in Uzbekistan, EU-backed water management reforms coexist with continued cotton monoculture and state control over land. In Kyrgyzstan, disaster preparedness programmes are welcomed but their implementation depends on political stability and donors' continuity.

[39] Energy Policy Brief: Kazakhstan, https://unece.org/sites/default/files/2025-01/Energy%20Connectivity-Kazakhstan%20Policy%20Brief.pdf.

This shows the limits of regulatory power. The EU's influence is strongest where its actions are in line with national priorities; for example, modernisation in Kazakhstan, water crisis in Uzbekistan, and catastrophic risk in Kyrgyzstan. Where the EU rules and regulations conflict with vested economic or political interests, their implementation is limited.

Case studies show that the EU cooperation is distinguished by its involvement with civil society organisations. Unlike China and Russia, which prefer international channels, the EU regularly involves local NGOs, universities, and community groups in project implementation. This dimension of civil society enhances legitimacy, transparency, and local accountability. In Kyrgyzstan, for example, the EU-funded school disaster risk reduction programmes have gained public support. In Uzbekistan, water management projects have worked better when farmers' associations have been involved.

However, the limited political context in Uzbekistan and Turkmenistan and to a lesser extent in Kazakhstan, restricts the EU's ability to increase the involvement of civil society organisations. Where urban space is limited, the EU's influence is mainly technical and elite-based. Furthermore, the geopolitical landscape of the region limits but also enables EU climate cooperation. Beijing's Green BRI creates competition but also opens up opportunities for joint renewable energy projects, especially in Uzbekistan and Kazakhstan. Moscow's relative indifference to climate issues leaves room for the EU to shape its own discourse, even though Russia is the primary security guarantor.

Central Asian countries pursue a multilateral foreign policy, involving all external actors in order to maximize benefits. This pragmatic approach allows EU programs to coexist with Chinese and Russian influences. This means the EU should not aim to directly compete with China or Russia, but rather to differentiate itself by emphasizing governance, sustainability, and inclusiveness.

Statistical data also confirms the urgent need for climate cooperation. Around $10 billion is lost every year due to climate related natural disasters in Central Asia. Furthermore, almost 3 million people are affected by these

natural disasters annually.[40] It is estimated that by 2050, 2.5 million people in Central Asia could face internal climate displacement due to water scarcity and desertification.[41] Such figures force regional states to look towards external actors, particularly the EU for cooperation and guidance.

Recommendations

- The EU should significantly increase grants and blended finance for renewable energy and water management, moving beyond pilot projects to long-term infrastructure investment.
- The EU should also support regional frameworks such as International Fund for Saving the Aral Sea (IFAS) and promote data-sharing mechanisms between upstream and downstream states.
- EU-Central Asia ministerial dialogues should explicitly link climate impacts to migration, food security, and regional stability.
- Integration of Green BRI and UNDP Joint programming with EU's initiatives can avoid overlap and enhance resource mobilisation.
- Increase support for local NGOs, universities, and community groups, especially in Uzbekistan and Kazakhstan, where reforms are underway will bring the desired results.
- Promote satellite-based monitoring, climate modelling, and early-warning technologies across the region.
- Provide technical expertise to align national climate frameworks with EU standards and global best practices.

Conclusion

Climate change poses one of the most formidable challenges to Central Asia's sustainable development, security, and regional stability. The increasing frequency of floods, droughts, glacial melting, and desertification has intensified socio-economic vulnerabilities and geopolitical tensions among the regional states. Against this backdrop, the European Union has emerged as a distinctive yet limited actor, one that approaches climate

[40] Lilia Burunciuc. "Natural disasters cost Central Asia $10 billion a year – Are we doing enough to prevent them?", *World Bank Blogs*, 5 November 2020. https://blogs.worldbank.org/en/europeandcentralasia/natural-disasters-cost-central-asia-10-billion-year-are-we-doing-enough.

[41] "World Bank experts on Central Asia's looming water crisis", *Dialogue* Earth, 15 February 2023. https://dialogue.earth/en/water/global-regional-action-crucial-avoid-central-asia-water-crisis-world-bank-experts/#:~:text=The%20report%20also%20examines%20the,be%20climate%20out%2Dmigration%20hotspots.

cooperation through governance, institutional reform, and normative engagement rather than large-scale financial investment. The EU's role, though modest in material terms, is significant in shaping discourse on environmental governance, regional dialogue, and inclusive resilience.

Through its strategic frameworks such as the EU-Central Asia Strategy (2019) and the European Green Deal, Brussels has embedded climate security into its broader foreign policy architecture. Initiatives in renewable energy, water management, and disaster preparedness have fostered local capacity, strengthened early-warning systems, and promoted transboundary cooperation. Case studies from Kazakhstan, Uzbekistan, and Kyrgyzstan demonstrate that while the EU's interventions are often small-scale, they have enhanced regulatory quality, civic engagement, and policy coherence in environmental governance.

Nevertheless, structural constraints persist. Limited financial leverage, bureaucratic inertia within Central Asian regimes, and competing external influences restrict the EU's transformative potential. Many of its programs remain pilot in nature and depend heavily on local political will. Yet these challenges also reaffirm the EU's comparative advantage in normative leadership and knowledge diplomacy. By positioning climate cooperation as a form of soft power, the EU contributes to regional resilience while maintaining geopolitical balance.

Going forward, greater synergy among EU programs, multilateral institutions, and local stakeholders is essential. The EU should expand climate financing, support transboundary water governance mechanisms like IFAS, and align its initiatives with the United Nations' Sustainable Development Goals. Partnerships with China's Green BRI and UNDP-led regional frameworks could amplify impact while avoiding duplication. Ultimately, the EU's long-term success in Central Asia will depend on its ability to integrate environmental sustainability with socio-economic development, transforming climate vulnerability into a foundation for cooperative regional order and shared resilience.