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CLIMATE CHANGE AND MIGRATION IN KARAKALPAKSTAN: PATTERNS AND POLICY IMPLICATIONS

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1. Introduction

Climate change has become one of the most pressing drivers of human mobility of the twenty-first century. In 2025, nearly 117 million people were forcibly displaced worldwide for a variety of reasons, with almost 30 million of these displacements attributable to natural disasters. Current projections indicate that climate change will raise the baseline rate of global migration over the next four decades.

Central Asia is among the regions where the gap between environmental reality and capacity appears to be most visible. Temperatures in the Aral Sea basin are rising at roughly three times the global average, Uzbekistan ranks among the twenty most drought-prone countries in the world, and the World Bank projects up to five million internal climate migrants across Eastern Europe and Central Asia by 2050. Within this regional picture, the Aral Sea basin, and specifically the Republic of Karakalpakstan, represents a case of particular significance. Most importantly, climate change in this region does not operate as an independent, first-order cause of migration. It functions instead as a risk multiplier. In other words, as a force that intensifies pre-existing ecological degradation and socioeconomic vulnerability.

2. Migration Patterns in Karakalpakstan

Contemporary migration from Karakalpakstan is characterized primarily by internal mobility and circular labor migration, although the republic also records disproportionately high levels of permanent international emigration. In 2025, the Republic of Karakalpakstan recorded a net migration loss of 5.4 thousand people, the second-largest among Uzbekistan's regions. Relative to its population size, however, the outflow was the highest in the country: in 2024, the republic recorded a net internal migration rate of –2.7 per 1,000 inhabitants, indicating that Karakalpakstan loses more residents to internal migration than any other region of Uzbekistan. Similarly, the National Statistics Committee reports that in 2025, registered external departures (3,532) exceeded external arrivals (101) by almost 35 to one. Although Karakalpakstan accounts for only about 5.4% of Uzbekistan's population, it generated approximately one-third of all recorded external emigrants nationwide. This pattern persisted in the first quarter of 2026, when 727 of the 2,277 people who left Uzbekistan for permanent residence abroad (31.9%) originated from Karakalpakstan, the highest regional total in the country.

Beyond permanent migration, temporary labor migration has become an increasingly important livelihood strategy. According to the Ministry of Employment and Poverty Reduction, 1.86 million Uzbek citizens worked abroad during January – September 2025, representing a 38% increase over the same period in 2024. Within Karakalpakstan, the share of working-age residents participating in seasonal labor migration varies across districts but generally ranges between 5% and 10%, reflecting the growing importance of migration as a source of household income.

The economic significance of migration is reflected in the rapid growth of remittance inflows. According to the Central Bank of Uzbekistan, remittances reached $18.9 billion in 2025, an increase of 27% compared with 2024 and almost seven times the $2.7 billion recorded in 2016. Karakalpakstan is more dependent on migration-related income than the national average. The National Statistics Committee reports, international remittances accounted for 18.3% of aggregate household income in 2025, while 30.8% of total household income consisted of all transfers, including remittances, pensions, and social benefits. These figures indicate that migration has become an important component of household livelihoods.

Historically, the indigenous Karakalpak population exhibited relatively low levels of migration, while outmigration was dominated by Russian-speaking, Kazakh, and Turkmen minorities. Recent studies indicate that this pattern has changed. Karakalpaks, particularly from rural districts, now constitute an increasing share of migrants, while immigration from neighboring countries has declined. Consequently, internal labor migration has become increasingly prominent within the republic's migration profile, and the continuing loss of economically active and highly qualified workers is likely to exacerbate existing labor market constraints.

Migration patterns also reflect the republic's highly uneven settlement geography. Karakalpakstan has one of the lowest population densities in Uzbekistan, averaging approximately 12.2 persons per km², while accounting for only 5.4% of the country's total population. Settlement is concentrated almost entirely within the irrigated Amu Darya delta, where population densities range from 36 to 172 persons per km² and exceed 150 persons per km² in districts such as Khojeyli and Amudarya. In contrast, the Ustyurt Plateau and the north-western Kyzylkum Desert, which together occupy almost half of the republic's territory, support only 0.3–0.7 persons per km². The environmentally vulnerable districts of Muynak and Kungrad remain the most sparsely populated parts of the republic, with average densities of approximately 0.9 and 1.8 persons per km², respectively. These pronounced spatial disparities provide important geographical context for understanding contemporary migration, as the most environmentally exposed areas continue to experience the greatest demographic pressures.

Interviews with local and international experts, including specialists with backgrounds in government, IOM, and UNHCR, providing both regional and comparative institutional perspectives on climate-induced migration, show that environmental pressure was described as driving internal, increasingly permanent relocation with Muynak repeatedly cited as a case where migration has become “unavoidable” rather than a matter of choice.

Generational differences featured prominently, with older residents described as more attached to place through family, land, and cultural ties, and younger residents increasingly orienting toward permanent relocation. On trapped populations, specifically, experts identified a wider set of constraints than economic poverty alone, including insufficient professional qualifications for urban labor markets, psychological uncertainty about relocating, and, in one account, gendered constraints on women's mobility.

3. Conclusion

The experience of the Aral Sea basin demonstrates that climate-induced migration cannot be viewed solely as a migration problem. It reflects deeper structural deficiencies, partially leading to the decline in resilience of local communities.

Labor migration has become one of the main mechanisms by which households compensate for declining local incomes. Remittances from labor migrants contribute to increased family resilience in the short term, but long-term dependence on labor migration simultaneously demonstrates insufficient economic diversification in environmentally vulnerable regions.

Climate-induced migration also creates new challenges for migrant-receiving territories. Internal migration to Nukus, Tashkent, and other cities increases the burden on housing, the labor market, healthcare and education systems, as well as public utilities and transport infrastructure. Without advance planning, accelerated urbanization could lead to additional strain on municipal services.

The significance of these processes extends far beyond Uzbekistan. The Amu Darya and Syr Darya rivers remain transboundary waterways shared by all Central Asian states. According to current climate forecasts, climate change will lead to a further reduction in river flows. It is projected that by 2050 river runoff will decline by 10–15% in the Amu Darya basin and by 2–5% in the Syr Darya basin, while high-emission scenarios estimate reductions of up to 21–40% and 15–30%, respectively, while demand for water resources from agriculture, industry, and urban populations is expected to increase. Under these conditions, migration, water security, food security, and regional development are becoming increasingly interrelated areas of public policy. Effective solutions require deeper regional cooperation in water resource management, climate change adaptation, disaster risk reduction, and environmental monitoring. Otherwise, environmental degradation is likely to reinforce existing migration pressures and further undermine socioeconomic resilience across the Aral Sea basin.

At the national level, Uzbekistan has recently moved to address outmigration from Karakalpakstan through targeted economic development. Presidential Decree No. PP-70 sets development targets for the republic, including, by the end of 2026, 8.1% growth in gross regional product, $3.5 billion in foreign investment, a reduction in unemployment to 4.2% and poverty to 3.2%, and the designation of Nukus city and Kungrad and Chimbay districts (109 mahallas) as “unemployment- and poverty-free” zones, alongside a separate programme to halve poverty in four districts classified as “difficult,” Bozatau, Kanlykul, Muynak, and Shumanay (90 mahallas), through enterprise development and infrastructure improvements. By 2030, the decree targets gross regional product of 102.4 trillion sums, exports of $900 million, and centralized drinking water coverage of 83.5%. The decree also extends the tax incentives established under Presidential Decree No. UP-213 (August 2022) from 2028 through 2040.

This is further reinforced by a longer-horizon strategic vision. Drawing on international experience, the Government of Uzbekistan, together with the Boston Consulting Group (BCG), has developed a long-term development strategy for Karakalpakstan through 2035. As the strategy continues to evolve through consultations and review processes, it provides an important framework for the region's long-term socioeconomic transformation. The strategy seeks to transform the republic into a center of renewable energy, sustainable agriculture, industry, and tourism, with projected economic growth of approximately 6% annually by 2035. With an estimated wind energy potential exceeding 60 GW, planned investments in green industrial cluster, and measures aimed at improving water efficiency and economic diversification, Karakalpakstan increasingly represents not only a case of climate vulnerability but also a potential model of climate adaptation and resilient development in Central Asia. Importantly, the future of Karakalpakstan is increasingly viewed as a national development priority rather than solely as an environmental challenge.

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