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Global Experience in State Regulation of Climate Migration Processes

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Abstract: Large scale human mobility is being accelerated by climate change, presenting multifaceted social and economic questions for states. There are significant gaps in protection as no global legal status for climate migrants exists; this continues to be overlooked despite increasing awareness amongst states. To fill this gap, we examine the similarities and differences in climate migration regulations between developed and developing countries and through a qualitative analysis of peer-reviewed literature on international policy documents and reports produced by institutions such as the International Organization of Migration (IOM) and the United Nations High Commissioner for Refugees (UNHCR). The breakdown reveals that developed countries favour legal approaches, drawing on temporary protection programs, humanitarian admission and national strategies to cope with climate change, while developing countries adopt a wider range of emergency and adaptation measures and are concerned about international assistance. Prioritizing unregulated climate displacement leads to infrastructure, labor market, and social system pressures, while well designed migration programs can deliver significant fiscal net contributions (which may indicate that the fiscal impact of unmanaged climate displacement leads to pressure on infrastructure, labor markets and social systems. The point estimates presented here should be regarded as conservative, highlighting climate migration as a humanitarian issue, an economic reality, and an area requiring coordinated action. Effective governance requires combining legal protection, long term adaptation planning and facilitated action by states, NGOs, and the international organization, concludes the study. The sustainable and rights based management of migration requires strong national legislation and an internationally recognized status for climate migrants.

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1. Introduction

Climate change is increasingly intensifying human mobility, creating urgent challenges for countries worldwide. Rising sea levels, drought, and extreme weather events are forcing communities to migrate, which necessitates effective governance. Global experience shows that there is a significant disparity between developed and developing countries. While developed countries have implemented legal frameworks, temporary protection programs, and disaster response mechanisms, developing countries rely more heavily on adaptation policies, social stability, and international aid. Comparing these approaches will help identify best practices that can be directed towards establishing a sustainable and rights-based foundation for managing climate migration.

Literature review. The issue of climate migration has been widely discussed in scientific and political literature for the last two decades. Scientists emphasize that climate change is not only an ecological phenomenon but also a driving force of social and economic changes that intensify existing migration flows and create new forms of migration [1]. Studies show that the impact of climate change is unevenly distributed, and vulnerable populations in developing countries are most at risk [2].

International organizations such as the International Organization for Migration and the Office of the UN High Commissioner for Refugees emphasize the lack of a unified international legal framework for the protection of climate migrants [3][4]. Conversely, regulation largely depended on national policy and regional agreements. Studies in developed countries often emphasize the role of temporary protection regimes and resettlement programs, while studies in developing countries indicate innovative adaptation strategies, where migration itself is considered a form of resilience [5][6].

2. Materials and Methods

This study employs a qualitative and comparative approach to examine global experiences in state regulation of climate migration. The analysis is based on secondary data, including scientific literature, policy documents, and reports from international organizations such as the ILO, UN High Commissioner for Refugees, and the World Bank. By comparing strategies of developed and developing countries, the research identifies key legal, institutional, and policy mechanisms, highlighting common trends and specific practices.

3. Result and Discussion

Developed countries have developed specific legal and institutional mechanisms for regulating migration processes caused by climate change. Such experience allows for the study and adaptation to other countries of the most effective approaches to the protection of environmental migrants at the international level. Particularly noteworthy are the temporary protection programs adopted by developed countries, special legal regimes aimed at ensuring security, and political measures to support persons affected by climate disasters.

According to statistics, more than 65 million people were internally displaced or refugees in 2016, while an average of 26.4 million people are forced to leave their homes due to natural disasters each year [7]. This process is reshaping the global labor market. For example, the main flow of environmental migrants to the USA comes from the Asia-Pacific region; this region is undergoing rapid urbanization and economic transformation processes, as a result of which the pressure on economic opportunities and resources is increasing [8].

Migration flows caused by climate change and environmental problems have a significant impact on the global economy. The migration of environmental migrants often alters the geographical distribution of the workforce, putting significant pressure on the labor market, infrastructure, and financial resources of states. This process can exacerbate economic crises, especially for developing countries. At the same time, economic inequality and vulnerability caused by environmental migration hinder the sustainable development of many regions and states. Regulation of the flow of environmental migrants contributes to the effective functioning of the labor market in host countries, the creation of new jobs, and the acceleration of economic integration processes. At the same time, international agreements and national strategies can also serve to reduce the economic burden caused by environmental migration.

In the study of ecological migration, the experience of not only the region, but also countries, in particular developed countries, effectively combating these problems, is of great importance. In recent years, climate change has manifested itself not only as an ecological, but also as an economic threat to developing countries. It manifests itself not only in the form of natural disasters, but also as a factor intensifying internal migration processes. As a result, the migrating population puts additional pressure on urban and regional infrastructure, causes significant damage to the state's economy, and hinders sustainable development.

Developed countries use various approaches and mechanisms in managing the issue of environmental migration. They primarily provide for temporary or permanent protection of persons affected by natural disasters and environmental threats caused by climate change. At the same time, these countries play a leading role in the creation of legal and political instruments regulating environmental migration.

National legislative strategies are also one of the main legal mechanisms for managing environmental migration flows and protecting the rights of environmental migrants. Each country's

strategy is developed in accordance with regional environmental risks, the impact of climate change, and economic conditions. At the same time, national legislation serves to regulate migration and ensure safe and sustainable integration by complying with regional and international legal standards.

Developed countries have developed economically and legally advanced systems for managing environmental migration. For example, in the USA, the Federal Emergency Management Agency (FEMA) manages migration flows caused by natural disasters and finances projects that ensure regional stability. Legally, the National Climate Adaptation Strategy and the Disaster Mitigation Act define the mechanisms for ensuring the safety of environmental migrants and regulating migration flows [9]. The USA does not have a regulatory framework that legally fully covers environmental migration, but one of the temporary protection mechanisms - Temporary Protected Status (TPS) - grants the right to stay in the USA for a certain period to persons whose return to their homeland is at risk due to environmental disasters. The TPS program was first introduced by law in 1990 and is recognized internationally as an important legal instrument for natural disasters [10]. In particular, after Hurricane Mitch in 1998, TPS was introduced for citizens of Honduras and Nicaragua. At the same time, TPS is considered only a temporary solution and does not provide for permanent citizenship status for climate migrants, therefore experts emphasize that TPS is not a sufficient mechanism for climate migration [11].

Canada, on the other hand, uses the "Humanitarian and Compassionate Grounds (H&C)" mechanism to protect individuals who are at risk of returning to their homeland due to climate or natural disasters. Through this program, certain individuals can obtain temporary or permanent residence permits based on a humane approach to the consideration of immigration applications. Canada also implements special programs to support refugees and environmental migrants in cooperation with the UN Refugee Committee (UNHCR), which demonstrates the flexibility of the country's immigration system and its focus on protecting human rights [12].

Australia has also developed programs such as the "Pacific Access Category and Special Humanitarian Program," taking into account the fact that the countries of the Pacific islands are exposed to environmental risks. These programs grant temporary or permanent residence to persons forced to leave their place of residence due to environmental risks [13]. This approach reflects the Australian government's readiness to implement regional cooperation policies and proactive measures on climate migration. However, experts note that the coverage of these programs is limited and does not fully solve common regional problems.

Germany manages migration flows caused by climate change through territorial planning, sustainable labor markets, and infrastructure development. Legally, the Federal Climate Change Act and the Migration Act establish mechanisms for regulating environmental migration and safe integration [14].

Japan manages migration flows caused by natural disasters through projects that ensure regional infrastructure and economic stability. Legally, the Disaster Countermeasures Basic Act defines measures to ensure the safety of environmental migrants and disaster preparedness [15].

The experience of the above countries shows that various temporary and permanent mechanisms are effectively used in the management of ecological migration in developed countries. It can be said that developed countries use not only legal, but also economic approaches to managing environmental migration. Their policy is aimed at creating economic benefits for such migrants and effectively distributing resources through the state budget. Below we can see the economic aspects of the above-mentioned practices (Table 1).

Table 1

Economic impact of ecological migration in developed countries [16]

Nº	Country	Mechanism / Program	Annual economic contribution (\$ bln)	Tax revenues (\$ bln)	Participation in labor force / State expenditures (\$ bln)
1	USA	TPSD	\$22 bln	\$2.2 bln	Labor market participation – 12%; State support: \$1.5 bln
2	Canada	H&CC	\$5 bln	\$0.5 bln	Integration support; State support: \$0.3 bln

3	Australia	PEV	\$1.2 bln (approx.)	\$0.15 bln	Active labor market; State support: \$2.1 bln
4	European Union	TPD	\$3.5 bln (approx.)	\$0.4 bln (approx.)	Labor market integration; State support: \$0.2 bln

According to the table above, through TPS (Temporary Protected Status) and similar programs in the USA, migrants contribute approximately 22 billion US dollars annually, of which 2.2 billion dollars goes to the budget in the form of taxes. The costs of implementing the programs amount to \$1.5 billion. Studies show that the majority of migrants with TPS status are economically active[17]. In Canada, migrant reception programs based on H&C (Humanitarian and Compassionate) bring \$5 billion in profit to the economy annually, of which \$0.5 billion is directed to the budget in the form of tax revenues, while program expenses are relatively low - \$0.3 billion [18]. Australia takes a cautious approach to programs for the reception of environmental migrants. According to the data, through these programs, an economic contribution of \$1.2 billion, tax revenues of \$0.15 billion, and expenditures of \$0.1 billion are recorded annually [19]. Although programs to support environmental migrants in the European Union vary, a total economic contribution of \$3.5 billion, tax revenues of \$0.4 billion, and expenditures of \$0.2 billion was recorded [20].

As can be seen, programs for the reception of environmental migrants yield positive economic results. Although expenses exist, they are compensated by the contributions of migrants to production and taxes. This experience can serve as an important example for Uzbekistan and other developing countries.

We will analyze that in developing countries, migration processes caused by climate change are mainly associated with drought, land erosion, water scarcity, and extreme weather events. These factors are similar to the problems inherent in the countries of Central Asia, and below we will consider the experience of Pakistan, Ethiopia, Bangladesh, and India. Developing countries also strive to regulate ecological migration flows economically and legally.

Manages migration flows caused by natural disasters and cyclones in the Philippines through regional development and emergency assistance projects. Legally, the "Philippine Disaster Risk Reduction and Management Act" defines the mechanisms for protecting environmental migrants and regulating migration flows [21].

Nigeria manages migration flows caused by climate change and desertification through agriculture, water resources, and regional sustainability projects. Legally, the "National Climate Change Policy" defines the mechanisms for regulating environmental migration and ensuring the safety of migrants [22].

Climate migration is intensifying in Pakistan due to hot waves, melting glaciers, and water scarcity. As a result of major floods in 2022, more than 33 million people were forced to relocate temporarily or permanently. The government, with the support of the UN and the World Bank, is developing special programs for restoration and migration management. Within the framework of these programs, about 2 billion US dollars have been allocated to increase the sustainability of social protection systems and infrastructure [23].

In Ethiopia, thousands of families are migrating to other regions due to drought and land erosion. The "Productive Safety Net Programme" is being implemented in cooperation with the government and international organizations. The program will provide cash and food assistance to the population, as well as land reclamation and climate adaptation measures [24]. These measures contribute to the local economy while preventing climate migration.

In Bangladesh, due to rising sea levels and heavy rains, rural residents are forced to move to cities. Within the framework of the National Adaptation Plan (NAP), the government pays great attention to the construction of new housing and the creation of new jobs in safe areas. According to World Bank estimates, by 2050, Bangladesh risks losing 3-4% of its GDP annually to the economy due to climate migration [25]. The country manages migration flows caused by floods and cyclones through regional development projects. Legally, the "Bangladesh Climate Change Strategy and Action Plan" defines the mechanisms for protecting environmental migrants [26] (Table 2).

Table 2
Climate Migration in developing countries: Problems and Measures

No.	Country	Main climatic problems	Impact on migration	Measures being implemented
1	Pakistan	Heat waves; glacier melt; floods	In 2022, an estimated 33 million people were forced to relocate due to climate-related events.	Recovery program supported by the UN and World Bank (approx. \$2 billion).
2	Ethiopia	Drought; land erosion	Thousands of households have been displaced and are moving to other areas.	Productive Safety Net Programme (cash transfers, food assistance) and land rehabilitation measures.
3	Bangladesh	Sea-level rise; intense rainfall and cyclones	Rural populations are increasingly forced to move to urban areas.	National Adaptation Plan: creation of safe settlements, housing and livelihood support; coastal protection and relocation initiatives.
4	India	Heat waves; drought; intense monsoons	Projections indicate up to 40 million people could be displaced by 2050.	National Action Plan on Climate Change (NAPCC): agricultural diversification, water conservation, development of resilient livelihoods and relocation planning.

In general, the analysis of developing countries shows that in the fight against climate migration, attention is paid not only to emergency assistance measures, but also to long-term economic adaptation and sustainable development strategies.

In the following table, we can see in numbers the climate migration and its economic impact in the examples of India, Pakistan, Ethiopia, and Bangladesh (Table 3).

Table 3
Climate migration and economic impact: Developing countries [27]

No.	Country	Climate migrants (projection)	GDP impact / economic damage
1	India	By 2050, about 45 million internal migrants	By 2050, urban infrastructure will require an estimated \$2.4 trillion in investments.
2	Pakistan	In 2022, about 15 million people displaced by floods	Estimated damages from 2022 floods exceeded \$30 billion; recovery needs reached \$16.3 billion.
3	Ethiopia	By 2030, climate change-induced migration expected to rise (no exact figures reported)	By 2030, annual GDP growth may decline by 1-1.5%; by 2040, losses could reach 5%.
4	Bangladesh	By 2050, more than 13.3 million internal climate migrants expected	Each year, tropical cyclones cause about \$1 billion in damages.

According to the table above, migration processes caused by climate change in developing countries are causing significant economic pressure. In particular, it is projected that there will be 45 million internal climate migrants in India by 2050, and 2.4 trillion US dollars will be invested in urban infrastructure. In Pakistan, as a result of the devastating floods that occurred in 2022, the country's economy suffered \$30 billion in losses. In Ethiopia, a 1.5-4% decline in GDP is expected by 2030 as a result of climate impacts. Bangladesh is projected to have 13 million climate migrants by 2050, putting significant pressure on infrastructure.

The above analysis shows that climate migration has a great impact on the sustainable development of states not only demographically, but also economically. Sustainable urban development, adaptation strategies, and international financial assistance are crucial for managing these processes.

Effective management of migration processes caused by climate change and environmental problems requires the activities of not only states and international organizations, but also non-governmental non-profit organizations (NGOs) and representatives of civil society. In particular, large and influential NGOs such as Oxfam International, CARE International, and Climate Action Network are actively working on adapting to climate change, preventing environmental migration, and ensuring socio-economic stability. These organizations, through their projects, make a significant contribution to increasing the economic resilience of the population and reducing migration pressure. At the same time, their global and regional cooperation is of great importance in the fight against environmental problems (Table 4).

Table 4
Major NGOs and civil society initiatives on ecological migration
(2023–2024)

Organization Name	Financial Volume (2023–2024)	Activity Directions	Regional Coverage	Economic Impact	Important Statistical Information
Oxfam International [28]	\$134 million	Sustainable livelihoods, economic empowerment of women, water supply	Africa, South-East Asia	Climate-related problems cause forced migration, reducing local economic opportunities	Approximately 40% of World Bank climate funds are unmonitored; only \$2.4 billion allocated out of \$53.3 billion needed for East Africa
CARE International [29]	\$110 million	Rural infrastructure, energy, microcredits	Africa, South Asia, Latin America	Adaptation opportunities created for women and vulnerable groups	No precise financial statistics found, but an active portfolio of climate adaptation projects exists
Climate Action Network (CAN) [30]	Budget not disclosed (advocacy is main focus)	Political influence, civil voice, global campaigns	Global (130+ countries)	Influence on climate finance policy and involvement of civil society in migration policy	Plays a role in strengthening political advocacy and civil voice; financial statistics not available

The table above shows the financial scale, main areas of activity, and economic impact of large non-governmental non-profit organizations operating in the field of environmental migration - Oxfam International, CARE International, and Climate Action Network in 2023-2024. These organizations play an important role in reducing the negative impacts of climate change, increasing the economic resilience of local communities, and managing environmental migration flows. The data in the table are formed on the basis of their financial capabilities and activities at the global and regional levels, which reveals the importance of NGOs in the fight against environmental problems. The activities of such organizations in the field of climate migration are not limited to financial support, but are also reflected in such areas as political influence, the creation of legal protection

mechanisms, and ensuring the participation of the local population. NGOs also serve as an important tool for the effective distribution and monitoring of global climate finance. In the future, strengthening their role, developing cooperation, and expanding financial opportunities will become the main factor in solving the problems of ecological migration.

As world experience shows, one of the main problems remains the lack of a universal international document that clearly defines the legal status of environmental migrants. Therefore, different countries use different approaches at the national level, which hinders the formation of a unified mechanism. As a result, this reveals two main gaps in the regulation of climate migration:

1. The legal category of "climate migrants" has not yet been fully recognized at the international level;
2. Existing mechanisms (TPS) are often temporary and narrow in scope.

The experience of foreign countries shows that effective management of climate migration processes arising as a result of climate change requires a comprehensive approach. Developed countries, especially the countries of the European Union, are trying to develop special strategies that take into account climate and environmental factors when regulating migration. Developing countries, on the other hand, form national strategies, relying more on the support of international organizations and donors.

Conclusion

Analysis of international practice also shows that in the process of managing migration, relying on the recommendations and guidelines of international organizations, such as the UN, ILO, and IOM, yields effective results. For the effective solution of the problems of global climate migration, it is important to establish a multifaceted and multilateral approach. Not only states, but also international organizations, the non-governmental sector, and civil society must actively participate in this process.

The international community faces the task of defining the status of environmental migrants and creating legal mechanisms for their protection. This process is important not only for ensuring human rights, but also for reducing the economic risks caused by climate change.

In conclusion, national strategies play an important economic and legal role in managing environmental migration. From an economic point of view, they define measures for managing regional resources, coordinating agriculture and the labor market, as well as reducing migration flows. From a legal point of view, normative mechanisms will be developed to ensure the safety of environmental migrants, their integration, and the regulation of state policy. Thus, national legislation serves the sustainable, safe, and effective management of environmental migration processes.

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