Journal of Global Economics, Public Policy and Development

jglobed.com

Research Article

Green Climate Fund and Eurasian Economic Union: Towards Convergent Interaction of Member States in Climate Finance Area

Mark Shugurov*

Department of International law of Saratov State Law Academy, Chernyshevsky st., 104, Saratov, Russia, 410056; Tel: +7(906)3086158; E-mail: shugurovs@mail.ru

(*Corresponding Author)

Cite This: https://doi.org/10.65638/2979-5842.2026.1.07

ABSTRACT: The purpose of this study was to form and substantiate a theoretical model of coordinated interaction between the EAEU member states and the Green Climate Fund as one of the directions of the Union's climate agenda. Achieving this purpose was based on the following key methods: 1) the comparative method made it possible to compare the achieved level of cooperation between the member states of the EAEU and the Fund and also the degree of their progress towards direct interaction with latter; 2) the analytical method was used during the consideration of statistical material concerning the negative impact of climate change on the EAEU member states; 3) a systematic approach became the basis for identifying the integration of cooperation with the Fund into the mainstream of the climate agenda of the Union and its member states; 4) the modeling method made it possible to formulate a theoretical structure of possible interaction between the EAEU as an integration association of states and the Fund. The study demonstrated that several EAEU member states (Kyrgyzstan, Kazakhstan and Armenia) are actively is carrying out programs and projects supported by the Fund, which not only relate to various sectors, but also support the formation of a mature climate policy in these states. In general, this group of countries is in a stage of transition to a mature institutional phase of interaction with the Fund. The second group of states (Russia and Belarus) do not participate in the Fund's projects, but maintain specific relations with it. The author substantiates that, despite such divergence, the Union's climate agenda involves interaction with the Fund at the integration level as some international track for the Union's positioning. The essence of this track is inclusion in interaction with the global climate finance system.

Keywords: Green climate fund, Climate agenda, Green finance, EAEU, Climate projects

1. INTRODUCTION

One of the features of current phase of response to climate change is the involvement of integration associations of states in the process of taking agreed action. At the regional level the process of solving the problem of adaptation and mitigation is taking place. The combination of efforts becomes possible due to the development of a coordinated climate agenda. One of the aspects of integrated climate policy is solving the issues of forming the modern climate finance system as an integral part of such a phenomenon as green finance. The mobilization of funds for various climate projects occurs not only from internal, but also from external sources. The last ones are especially valuable in cases of shortage of national resources.

The global climate finance system, which supports adaptation and mitigation projects and programs around the world, is of great value to developing countries and countries with economies in transition. For such states, not only international development banks, but global environmental funds are of particular value. One of them

Received: October 01, 2026
Accepted: November 02, 2026
Published: November 06, 2026

is the Green Climate Fund (hereinafter referred to as GCF, Fund), which simultaneously acts as an operational financial mechanism of the UN Framework Convention on Climate Change and the Paris Climate Agreement. If the states whose climate projects are supported by the GCF are part of a regional association of states, then agenda for coordinated interaction with the GCF, as well as with other funds and international development agencies, arises.

An example of a regional association of states that is an example of this pattern concerning climate finance is the Eurasian Economic Union (hereinafter referred to as EAEU, Union). Its peculiarities include not only the high dynamics of integration processes, but also the consistent development of the agenda of integrative cooperation. Over the past few years, the economic cooperation agenda has been supplemented by digital and, which is very significant, green agenda, aimed at environmental formatting of economic development and industrial cooperation of member states. As part of the green agenda, the climate agenda has emerged in recent years.

The EAEU, like other regional associations of states, pursues an active foreign policy and actively positions itself in the external arena. In this context, the EAEU claims to become one of the authoritative and influential centers of the modern world. This means that it is involved in the technological race. Since the modern technological transition is set by the low-carbon development paradigm, the formation of the Union's climate agenda has become quite logical. This direction is rooted in the climate policy pursued by its member states. The noted agenda also provides for the harmonization of carbon regulation in the Eurasian space. Another item on this agenda is the development of green and climate finance, which involves active interaction with international financial institutions. GCF is among such structures with which the Union is interested in cooperation.

Three states of the Union, namely Kyrgyzstan, Kazakhstan and Armenia, are recipients of GCF funds allocated for the implementation of various projects and programs in the climate area. In turn, Russia is a voluntary donor to this Fund, and Belarus expresses interest in cooperation with it. At the same time, the integration format of the climate agenda requires the development of a policy of multilateral cooperation with the Fund.

In accordance with the stated essential premises of the study, the purpose of the article is to substantiate the need to transition of the interaction of Union's member states with the Fund into the mainstream of convergent multilateral interaction.

2. LITERATURE REVIEW

1. Issues of green finance (Maksimova SYu, 2024; Karimov, 2024; Prudnikova, 2023; Falcone, 2020; Hafner *et al*., 2019; Linnenluecke *et al*., 2016; Muktadir-Al-Mukit, Hossain, 2020; Miroshnichenko, Mostovaya, 2019; Panda, 2017; Arkhipova, 2017; Porfiryev, 2016) and climate finance (Kissinger *et al*., 2019; Little *et al*., 2015) are widely discussed in the world science.

This subject field also includes scientific works of researchers from the EAEU states. A number of similar studies are devoted to the development of green and climate finance within the framework of the EAEU (Kovalev, 2023; Shadiyan, 2023; Skobelev *et al*., 2022; Bank of Russia, 2022, p. 40), as well as in its member states, for example, in Russia (Dudin *et al*., 2022; Vasilyeva and Bakrunov, 2022; Belousov, 2022; Bobylev, 2021; Zimina and Finogenova, 2021, Tarkhanova and Fricler, 2020; Bazhenov, 2018, Andreeva and Vovchenko, 2017) and in Kazakhstan (Petrosyants, 2023; Doszhan *et al*., 2022; Yerbolatova, 2020).

However, these scientific studies lack a detailed and comprehensive analysis of the climate finance regime from external sources, including the GCF, at the level of the Union in general and its member states in particular.

2. Analysis of the directions for the formation of the EAEU integration climate agenda has become the subject of detailed analysis carried out by representatives of the scientific and expert community (Murashko, 2023). The process of transitioning the issue of green and climate finance to the integration level of discussion has recently begun to be analyzed (Migaleva *et al*., 2022).

The green agenda of the EAEU as a whole includes the issues of development of green and climate technologies (Lifshits, Smbatyan, Saliya, 2024; Malikova, Surikov, 2024; Vinokurov *et al*., 2023; Kononovich, 2023; Yurgens, Romov 2023; Volosatova *et al*. 2022; Maslova, 2023; Shugurov, 2021; Shugurov, 2018b). As noted by M.G. Shadiyan, the "green" agenda, which, despite all the current shocks, has become a long-term trend in the development of the world economy, is the focus of attention of the EAEU member countries both at the national and interstate levels. Taking into account the specifics, economic conditions, resources and strategic development goals, the EAEU member countries are at different levels of implementation of the "green agenda",

however, in general, all states have an understanding that ignoring the global climate agenda and delays in the transition to a low-carbon economy lead to high risks and costs. And, conversely, timely transformation brings many opportunities, including in the direction of increasing the level and quality of life of the population, preserving natural resources, modernizing economic sectors, increasing efficiency and productivity, etc. (Shadiyan, 2023).

One authoritative scientific and analytical report proposed the formation of a package of joint green and climate projects that could be financed by national development institutions and/or the Eurasian Development Bank. No less interesting is the proposal to focus efforts on coordinating "the green financing systems of the EAEU countries and, above all, green taxonomies, using as a basis the common goals of environmental and climate policies of the EAEU countries and Greater Eurasia" (Strategic initiatives and prospects for interaction between the EAEU countries in the field of combating climate change and environmental challenges. Report of the Institute of Research and Expertise, 2021, p. 50).

Unfortunately, the place and role of the GCF in the process of solving the problem of ensuring the influx of financial resources to EAEU member states has not yet been comprehended.

3. In the course of the author's efforts to analyze the massive body of existing literature, it was found that the number of scientific works devoted to GCF is still not numerous (Kempa *et al*., 2021; Lottje *et al*., 2019; Shugurov, 2019). However, the topic of interaction between the EAEU member states and the GCF is widely discussed by representatives of the expert community and is covered on the Internet information resources. The author of present article resorts to active use of them in the process of his original research.

As it were, it is far from accidental that the analysis of the Fund's interaction with the EAEU and its member states has not yet become the subject of special research. Against this backdrop, one is compelled to state that there are no special scientific studies that would be devoted to the interaction of the EAEU member states with the GCF, including in a comparative manner.

Therefore, this study seeks to collect these fragments into one subject field, which has all the prospects for further development.

The synthesis of the above areas of research testifies to novelty of the article and of the results obtained in it. In general, the novelty of the article lies in the fact that it is the first time that a large-scale study of the interaction of the EAEU and the GCF has been conducted, as well as the possibility and necessity of coordinating the interaction of the member states of the Union with the Fund, as well as the need to include the Fund in the system of foreign policy guidelines of the Union.

3. THE CONTRIBUTION OF THE ARTICLE TO THE SOLUTION OF THE SCIENTIFIC PROBLEM POSED

The article's contribution to addressing the research problem lies in the attainment of the following scientific results:

- based on the existing literature, for the first time, a new direction of research on the climate policy of the EAEU has been identified and justified. This consists of involving the GCF in solving the problem of developing and supporting a system of green and climate finance in states of Union;
- for the first time, an analysis of the interaction of the EAEU states with the Fund was carried out in a comparative manner at the level of a detailed and comprehensive scientific study;
- the interaction of the EAEU states with the Fund is shown as arising from internal prerequisites, namely the need to achieve the goals and solve the problems of national climate policy, an integral part of which is the development of a national system of green and climate finance;
- it has been demonstrated in detail that cooperation with the Fund significantly complements the cooperation of Union's states with other international financial organizations, such as the European Bank for Reconstruction and Development, the World Bank, the Asian Development Bank, the Eurasian Development Bank and the Global Environment Facility;
- it has been revealed that the GCF, at the level of supported programs and projects, not only contributes to the improvement of the climate policy of the Union member states, but also contributes to the development of the climate technology base in the Eurasian space. This is particularly important as some member states face challenges in accessing external green finance and green/climate technologies under sanctions regimes;
- it has been proven that the Fund can contribute not only to the implementation of the climate agenda, but also to the Union's broader green agenda;

- the idea of the Fund's possible participation in supporting joint climate and green projects of the EAEU was formulated;
- it is justified that the emergence of institutional relations between the EAEU and Fund will help strengthen the international positioning of the Union, which means its integration into the system of global green and climate finance.

4. MATERIALS AND METHODS

4.1. Research Program

Conducting a comprehensive study that is unique in the current scientific literature is supported by an extensive research program.

The core of latter included a study of the primary level of cooperation between the EAEU and the GCF, represented by the participation of Union's states in projects and programs financed by the Fund. The purpose of this analysis was to study the stage at which such interaction is located, as well as to determine further prospects on the path to more advanced coupling. At the same time, a differentiated approach was carried out. It consists in distinguishing two groups of EAEU states. The first group includes Kyrgyzstan, Kazakhstan and Armenia. These states are involved in the implementation of projects and programs of the Fund. The second group of states includes Belarus and Russia. Due to the fact that they are not developing countries, the Fund's projects and programs are not implemented in them. But, yet, there is interaction with the Fund, which has its own specifics in relation to Russia and Belarus.

If we keep in mind specific research tasks in relation to the first group of states, they include the following:

- conducting an analysis of the climate policy of the EAEU member states aimed at fulfilling voluntary obligations under the Paris Climate Agreement;
- study of the state of climate finance in these countries;
- comprehensive analysis of projects and programs in which member states belonging to the first group participate;
- determining directions for moving towards the mature stage of their interaction with the Fund.

Research tasks in relation to the second group of states involved clarifying the following questions:

- the nature of positioning in relation to the financial mechanism of the UN Framework Convention on Climate Change;
- determination of prospects in relations with the Fund.

Based on the core of the research program, an equally interesting and significant block was formed, involving predictive analysis, which is focused on solving the following issues:

- the possible contribution of the Fund to the development of the EAEU climate agenda and support for integration climate projects;
- the prospects of including interaction with the Fund in the areas of international activity of the Union.

4.2. Research Hypothesis

This study is aimed at testing the hypothesis, which is that the EAEU as an integration association of states in the process of forming and implementing the climate agenda is open to interaction with international structures, in particular in relation to the GCF as an essential component of the operational financial mechanism of the UN Framework Convention on climate change.

4.3. Theoretical Model Design

Addressing the objectives of the aforementioned research program relies on a general theoretical model. According to it, the interaction between states of various integration blocs and international financial institutions takes place at two levels, namely bilateral and multilateral, which are interconnected through direct and reciprocal links. In the context of the EAEU, this implies that the logic of integration within a coordinated climate agenda – including issues of climate finance – entails not only bilateral but also multilateral engagement by the Union's member states with financial institutions, in this instance, the Fund. Considering the model of "deepened" climate integration within the EAEU – which entails consistent and coordinated cooperation across all aspects of the climate agenda – the author argues that the existing bilateral engagement of EAEU member states should be complemented by a multilateral dimension. This theoretical position is supported by the argument that, in the contemporary landscape, regional integration blocs should be incorporated into the global climate finance system as a single, unified entity.

This type of theoretical model serves as a broad framework for a more specific theoretical model of the corresponding interaction mechanism between the EAEU

and the GCF, a schematic of which is presented in the final part of the given study (13. "Conclusions and recommendations").

4.4. Theoretical Background

The initial theoretical basis of the presented study is that the possible interaction of the EAEU at the institutional level with international structures of global climate finance, in particular with the GCF, grows out of the regional integration climate agenda.

4.4.1. The EAEU Climate Agenda as the Basis for the Integration Policy of Climate Finance

On the eve of the 26th session of the Conference of the Parties of the UN Framework Convention on Climate Change in Glasgow, at the meeting of the Supreme Eurasian Economic Council on October 14, 2021, a Statement on economic cooperation of the EAEU member states within the framework of the climate agenda was adopted[1]. This document reflects the position of the EAEU member states concerning regional and global climate agenda, which is within the purview of the academic community (Malikova, Surikov, 2024; Lifshits, Smbatyan, Saliya, 2024, p. 113-115).

In particular, in the preamble, the EAEU member states emphasized that responding to the challenges of climate change should take the form of processes of profound changes in the world economy, including causing a comprehensive technological transformation of production and a significant change in the structure of the world economy, which will be dominated by production and technologies with low greenhouse gas emissions.

Indeed, one of the central places in the Statement was occupied by the discussion of the technological aspects of climate response. As is known, the 2030 Agenda for Sustainable Development gives a significant place to achieving environmental safety[2]. This involves not only efforts to further green production based on green technologies, but also adaptation to climate change and mitigation of its consequences. And here we also cannot do without such a category of green technologies as climate technologies. Understanding their specificity has already been reflected in the literature (Brewer, 2008).

In line with current trends, the Statement recognized the importance of broad international exchange and non-discriminatory use of technologies that enable emissions reduction and low-carbon development. Along with this, the effective and rational use of fossil sources, nuclear energy and hydrogeneration, low-carbon transport, the introduction of hydrogen technologies, renewable energy sources, energy-efficient approaches and technologies in industry, agriculture and housing and communal services are emphasized. This once again confirms that climate change is not a purely environmental problem. In terms of economics, the climate agenda means a technological transformation of production processes and a transition to a new technological basis. Success in the transition to such base is the key to the competitiveness of the economy and the degree of its competitiveness. Moreover, climate change is a global challenge for all humanity, affecting all aspects of society and, accordingly, requiring comprehensive approaches and integrated solutions. It is quite obvious this approach sets the directions for economic and technological interaction between the EAEU member states.

Indeed, a feature of integration processes within the EAEU has been the gradual involvement of scientific and technological cooperation in its orbit. Today it is of significant importance for the modernization of production and economic activities and, additionally, for the inclusion of production and consumption in the framework of the transition to sustainable development and the achievement of its goals. Consequently, the horizon of scientific and technological integration is expanding. It correlates with the expansion of the Union's integration agenda, including through the inclusion of a block of environmental issues. Without solving the latter, solving the economic problems is no longer conceivable today. In other words, achieving the goals of the Union and increasing its competitiveness should be focused on ensuring environmental safety. Its achievement, in turn, is a guarantee of sustainable economic growth. As noted in the expert community, the EAEU states should take into account not only the economic benefits arising from the free movement of goods and services, but also the need to prevent and eliminate environmental threats in the region in the context of the prospects for the joint use of natural resources, complemented by the possibility of profitable investment in this area (Kolesnikova, Makarova, 2021).

The demand for green technologies in general and climate technologies in particular is also typical for the EAEU. And this is no coincidence, since Russia, as well as Kyrgyzstan, are most intensely experiencing the

[1] Statement on economic cooperation of member states of the Eurasian Economic Union within the framework of the climate agenda (14.10.2021 г.). Available from: https://eec.eaeunion.org/upload/medialibrary/966/Zayavlenie-ramka-.pdf

[2] Transforming our world: The 2030 Agenda for Sustainable Development // A/RES/70/1 (21 October 2015). Available from: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=R

negative consequences of climate change. For Kazakhstan, Belarus and Armenia, this issue is no less relevant. The EAEU states are parties to the UNFCCC, as well as the Paris Climate Agreement, according to which they accepted national obligations in the field of reducing greenhouse gas emissions (hereinafter referred to as GHGs). Note that both of these international treaties provide for provisions on the development of international scientific and technical cooperation. This aspect has been studied in sufficient detail in the literature (Shugurov, 2018a). The main beneficiaries of such provisions are developing countries.

The law of the EAEU currently does not provide for obligations for cooperation in the field of climate technologies at the regional level. However, the demand for such cooperation directly stems from the provisions contained in the aforementioned Statement. From our point of view, this involves intensifying scientific and technological cooperation in the development and commercialization of energy, agricultural, transport, industrial technologies, as well as the development of industrial cooperation. As follows from subsequent events, the Statement most intensively stimulated the process outlined in it of convergence of approaches to monitoring and verification of emissions and absorption of greenhouse gases and articulated the need for harmonization of carbon regulation. In essence, this presupposes the harmonization of the climate policies of the member states.

Be that as it may, the technological aspects of responding to climate change are inextricably linked with the financial issues of supporting related projects and initiatives.

For the subject of the presented article, it is most important not only the consideration and development of the absorptive capacity of ecosystems but also the stimulation of the use of green financing instruments to support climate projects and the transfer of the best available technologies. Green or, more specifically, climate finance is therefore seen as an aspect of the Union's climate agenda. Therefore, the Statement identified the need to develop coordinated approaches, including in this area, within the framework of the integration association.

Of course, highlighting this aspect is of a very general nature and requires further specification. The widespread development of climate finance in the integration format of the Union lead to creation of joint climate funds and preparation for the implementation of joint climate projects as a type of green projects.

It should be emphasized that the green agenda in the EAEU is at an advanced stage of formation. Achieving cooperation in this area should include the approval of the Criteria for green projects of the Union, or the so-called Model taxonomy[3]. The demand for these Criteria was caused by the fact that in the EAEU there is heterogeneity in the integration of the climate agenda into the legislation of the member states. Green financing mechanisms are at different stages of maturity. Therefore, the impetus for the development of the Model Taxonomy of the EAEU member states, which takes into account the criteria and approaches used by the world community, was the need to harmonize national approaches in determining the criteria for climate projects. The Criteria were approved in December 2022 at a meeting of the High-Level Working Group to develop proposals for bringing together the positions of the member states within the framework of the climate agenda. Their practical significance lies in creating a basis for unifying approaches to green financing within the EAEU and the financial instruments used (issuing green bonds, green loans), which leads to simplified access for national investors to the financial markets of the EAEU countries and, ultimately, can lead to increased investment in reducing GHG emissions.

As part of the implementation of the EAEU climate agenda, the Bank of climate technologies and digital initiatives was established. It currently already includes about 100 projects[4]. The Bank is intended to create conditions for accelerating and simplifying the diffusion of technological developments in the EAEU countries and, which is extremely promising, to allow the development of joint low-carbon projects and the commencement of their implementation. In 2023, the Concept for the introduction of green economy principles in the Eurasian Economic Union was adopted.

In principle, the EAEU climate agenda, reflected in the 2021 Statement, is a set of main areas of interaction. The mechanism for their implementation is the First package of actions (Road map) for cooperation among the EAEU member states within the framework of the climate agenda. It was agreed upon during the work that was carried out in 2021–2022 at the site of the High-Level

[3] Criteria for green projects of member states of the Eurasian Economic Union // Eurasian Economic Commission. Available from: https://eec.eaeunion.org/upload/medialibrary/df7/Kriterii-dlya-opublikovaniya-_Modelnaya-taksonomiya_.pdf

[4] Bank for Climate Technologies and Digital Initiatives // Eurasian Economic Commission. Available from: https://eec.eaeunion.org/comission/department/dotp/klimaticheskaya-povestka/bank/

Working Group to develop proposals for bringing together the positions of the EAEU member states within the framework of the climate agenda. The Group was created in August 2021 based on an order of the Eurasian Intergovernmental Council[5]. The purpose of the Package of measures is to prevent barriers and restrictions in the internal market of the Union and maintain the competitiveness of the economies of the member states in the context of global technological transformation and changes in the structure of the world economy. The Package of measures was adopted on October 21, 2022 at a meeting of the Eurasian Intergovernmental Council and includes the following areas of action:

- analysis of national legislative regulation in the climate sector and preparation of proposals for the development of common approaches in this area;
- development of proposals for the formation of joint market and non-market mechanisms for carbon regulation to achieve the goals of the Paris Agreement;
- determination of measures to stimulate low-emission transformation in the following industries, taking into account competencies: transport, energy, metallurgy, chemical industry, construction, agriculture;
- Eurasian low-carbon development initiatives;
- green financing;
- formation of the Bank of Climate Technologies and Digital Initiatives;
- coordination in the field of international trade relations on issues of the climate agenda and other interaction in order to promote the interests of the EAEU member states in the climate field in the international arena.

A review of these directions shows that they are fully consistent with the contours of the climate agenda. Of greatest interest is highlighting interaction in order to promote the interests of the EAEU member states in the climate sphere in the international arena. Of course, it must be coordinated. This is part of a coordinated approach to the implementation of the climate agenda in the Eurasian space as such. The EAEU recognizes that "coherence of actions on the Union circuit is the key to both the stable functioning of the internal market of the EAEU and the sustainable development of our economies. It is necessary to harmonize approaches to carbon regulation and the creation of infrastructure for the implementation of climate projects and the use of their results in order to prevent discrimination against the industry of our countries due to differences in the price of carbon and the rigidity of regulation"[6]. The purpose of synchronization is to avoid restrictions in trade, investment and technology.

It seems that the creation of infrastructure for the implementation of climate projects will include not only an internal, but also an external circuit, which, in principle, acts as a window into the international climate system and the international financing regimes for climate projects. The internal and external contours of climate action are a space for the active work of the Eurasian Economic Commission and its structures.

The formulation of the marked direction is abstract. It can be interpreted as involving interaction with various international structures and forums in the field of the global climate agenda. One type of such structure includes international financial organizations that support projects in the field of adaptation and mitigation of climate change. These include the European Bank for Reconstruction and Development, the World Bank and the Asian Development Bank. Cooperation on the international platform as the Framework Convention on Climate Change is particularly relevant.

The fact of interest in cooperation of the EAEU with GCF should be explained by two reasons. Firstly, there is a lack of financial resources intended for the implementation of climate projects in the its member states, and, secondly, there is a lack of a mechanism for financing the Union's integration climate projects. As Russian authors note, within the framework of the association there are no specific measures to finance "projects in the field of environmental management and environmental protection. This is largely explained by the fact that the EAEU budget, formed from contributions from member countries, is directed to the activities of the management apparatus and holding meetings" (Migaleva *et al*., 2022, p. 47).

[5] In addition to this, there is a separate subgroup whose task is to develop proposals for the formation of a joint approach in the EAEU within the framework of the implementation of paragraph 2 of Article 6 of the Paris Agreement, including provisions on the circulation and recognition of carbon units, common approaches in the Member States to the accreditation of validation bodies and verification in the field of climate protection.

[6] Synchronization of approaches on the climate agenda became the main topic of the EAEU seminar (26.01.2023). Available from: https://economy.gov.ru/material/news/sinhronizaciya_podhodov_po_voprosam_klimaticheskoy_povestki_stala_glavnoy_temoy_seminara_eaes.html

Of course, there must be a balance between the inner and outer contours. This means that setting up interaction with international structures based on developing a consolidated position on the formation of appropriate platforms for dialogue must be balanced with solving the practical problem of forming a common voluntary market for carbon units. In the latter case, a whole field for joint actions also arises, for example:

- on the mutual recognition of national accreditation systems for validation and verification bodies;
- the development of standards and methodology for climate projects;
- the coordinated development of registers;
- and the organization of trade in carbon units.

The need for interaction between Union and the Fund at the integration level stems, firstly, from the existing experience of cooperation with it in some Union states. Secondly, the EAEU has taken an important step towards the development of joint climate projects. Thus, in June 2023, the Eurasian Intergovernmental Council analyzed in detail the implementation of the First package of actions (Road map) for cooperation between the countries of the Eurasian Economic Union within the framework of the climate agenda. It was mentioned above.

Based on a comprehensive report of the Eurasian Economic Commission, which analyzed the national legislation of the Union member states and its main trading partners in the field of low-carbon development, the heads of government of the Union countries instructed to develop approaches to regulate the climate agenda within the EAEU. It is assumed that these approaches should provide for the implementation of cooperative climate projects in the context of stimulating low-carbon development[7]. In particular, we can talk about creating conditions for the circulation of the results of the implementation of cooperative climate projects by interested member states and third parties, taking into account international trends.

4.4.2. GCF's Place in Global Climate Finance

Within the Union, its member states retain the sovereign right to international activities, which, however, tend to be coordinated. It seems that coordination of multi-vector cooperation will contribute to ensuring environmental safety as a condition for the sustainable development of the EAEU economy and a factor in achieving the goals enshrined in the Treaty on the Union. Based on the principle of a close meaningful connection between internal and external cooperation, there are significant prospects for the interaction of the Union and its member states with international structures, in particular with the GCF. Understanding the significance and prospects of interaction between the EAEU and the GCF is based on understanding the place and role of this Fund in the global climate finance system.

As such, climate finance is defined as the provision of funds from public and private sources to adapt and mitigate the impacts of climate change. As a result, it is expected to reduce GHGs, increase their absorption and adapt to climate change. The goal of climate finance mitigation is to enable the transition to green development and achieve carbon neutrality. The adaptation goal is to provide financing for climate resilience and vulnerability reduction.

The GCF represents a prominent link in the global climate finance system. It was established in accordance with paragraph 102 of Decision No. 1/CP.16 of the Conference of the Parties to the UNFCCC in 2010 as an operational body of the financial mechanism of the Convention in accordance with Art. 11. Since the conclusion of the Paris Agreement in 2015, the GCF has been committed to the mission of a financial mechanism to achieve the agreed goal of keeping climate change well below 2 degrees Celsius.

As the financial mechanism of the Framework Convention, it finances low-emission, climate-resilient development projects based on approved mitigation and adaptation projects and programs in developing countries. In doing so, it aims to provide equitable funding to interested countries for mitigation and adaptation purposes. An important goal of the Fund is to stimulate the flow of climate finance to invest in development that is low-emission and resilient to significant climate change. Supported projects are carried out throughout the world, namely in Africa, Asia-Pacific, Latin America and the Caribbean and Eastern Europe. During its work, the Fund has financed 379 projects in 134 countries for a total of $20.3 billion. These are mainly projects to reduce greenhouse gas emissions in industry and the waste management sector, decarbonization of transport, as well

[7] The heads of government of the EAEU countries have been instructed to develop approaches to regulate issues on the climate agenda (09.06.2023). Available from: https://eec.eaeunion.org/news/glavami-pravitelstv-stran-eaes-porucheno-razrabotat-podkhody-po-regulirovaniyu-voprosov-klimatichesk/

as projects to adapt to climate change in agriculture and sustainable forest management[8].

The Fund offers a wide menu of financial products (grants, soft loans, subordinated debt, equity and guarantees). This allows you to respond flexibly to project needs and adapt to specific investment conditions. In fulfilling its mission, GCF aims to engage directly with both the public and private sectors. It engages with the private sector through its Private Sector Fund in an effort to attract additional funding. An important element of the GCF project cycle is interaction with accredited institutions. They are institutions that develop proposals for financing projects for which the Fund undertakes a competitive review in terms of their compliance with established financial standards, environmental and social guarantees. During the implementation of projects and programs, it supervises, controls, manages and monitors.

Accredited bodies are varied. They may be private, public, non-governmental, subnational, national, regional and international bodies. Direct access institutions may be subnational, national or regional organizations that are designated by the National designated authorities (NDAs) of developing countries or the relevant focal points. Organizations of international access may include United Nations agencies, multilateral development banks, international financial institutions and regional institutions. The Fund recognizes that these types of organizations are characterized by a broad scope of activities to address various climate change issues, including cross-sectoral thematic areas.

A valuable mechanism of the Fund is the “Readiness Program”, which is aimed at strengthening the capacity of countries to interact with the Fund. The program supports the following activities: development of National climate change adaptation plans and/or activities that are aimed at increasing the ability of the interested organization to apply for accreditation with the Fund, including in an accelerated manner.

Implementing a country's readiness program is an important preparatory step for developing partnership programs between countries and the Fund, *i.e.*, country partnership programs. The importance of these programs lies in the fact that, as part of the Fund's second capitalization phase (2023), 50 % of the funds are expected to be directed to African countries and the remaining 50 % to other countries. The Fund's resources are limited, resulting in competition among recipient countries. These programs, which are also implemented with the assistance of the Fund, are aimed at improving competitive advantages.

5. METHODOLOGY BACKGROUND

The methodological framework for this study was determined by its subject area. In the course of the research, the author employed the following methods and approaches:

- the historical method – to examine the development of cooperation among EAEU member states – within a spatiotemporal context – regarding the formulation and implementation of a common climate agenda, as well as the development of cooperation between individual member states and the GCF;
- the comparative method – to assess the current level of cooperation between EAEU member states and the Fund, as well as the extent to which each state has progressed toward direct engagement with it;
- the analytical method – to examine statistical data concerning the adverse impacts of climate change on EAEU member states, and to analyze the actual volume of financial support provided by the Fund for various projects;
- the systems approach – to identify how cooperation with the Fund is integrated into the broader climate agenda of the Union and its member states;
- discourse analysis – to examine the positions expressed by official representatives of EAEU member states regarding the significance of cooperating with the Fund;
- the modeling method – to construct a theoretical framework for the interaction mechanism between the EAEU (as an integration bloc) and the Fund;
- the forecasting method – to outline key issues for a potential agenda of engagement between the Union and the Fund.

6. USED DATA FOR EMPIRICAL ANALYSIS

In the process of implementing the research program, testing the hypothesis, as well as in achieving goals and solving assigned problems, the author used the widest amount of data and statistical materials that were subjected to empirical analysis:

1) statistics related to the negative impact of climate change on the EAEU states;

[8] Green Climate Fund. The world’s climate fund for developing countries. Available from: https://www.greenclimate.fund/about

2) data presented by official documents that express climate policy and consolidate the climate agenda of the EAEU in general and its states in particular;

3) information about the activities of the GCF and projects that are being implemented in the first group of EAEU states;

4) data on the policies of the EAEU member states in the field of climate finance;

5) materials from electronic media and Internet resources on the development of partnership between the EAEU states and the Fund.

An analysis of peer-reviewed data, as well as official policy statements and secondary sources, served as the basis for theoretical conclusions.

EMPIRICAL ANALYSIS AND ITS RESULTS

7. KYRGYZSTAN AND THE GREEN CLIMATE FUND

7.1. The Project Basis for Cooperation between Kyrgyzstan and the GCF

The Kyrgyz Republic, which belongs to the category of developing countries, faces a lot of challenges, including overcoming poverty, sustainable development of the private sector, increasing employment and income levels, as well as adaptation to climate change. In 2024 the Kyrgyz Republic ranks 73th from 186 countries around the world in terms of total greenhouse gas emissions[9]. However, strengthening climate resilience through adaptation measures is a key priority. The economy of the republic is facing unique challenges related to the current and projected effects of climate change due to its geographical and topographical features, as well as the structure of its economy.

This is due to the fact that Kyrgyzstan, as a landlocked country where mountain ranges make up more than 90 % of its area, is among the most vulnerable countries in Central Asia to climate change. Global warming, which entails a change in precipitation patterns and an increase in temperature, leads to droughts, especially in mountain pastures. Moreover, there is a risk of losing 80 % of glaciers by the end of the century. The combination of mountainous terrain and a rather dry climate, taking into account the decrease in precipitation, causes new difficulties for livestock and crop production. Therefore, it is quite indisputable that climate change has become a serious threat to Kyrgyzstan, its present and future. Extreme weather events devastatingly affect such key industries as agriculture, health protection, and biodiversity conservation. Hence, the development of resilience to the effects of climate change and the creation of conditions for further sustainable use are becoming increasingly important.

The Kyrgyz Republic, as a signatory to the UN Framework Convention on Climate Change, directs all its climate actions to achieve the ultimate goal of the Convention, which is aimed at stabilizing greenhouse gas concentrations in the atmosphere at a level that would not allow dangerous anthropogenic impact on the climate system. In accordance with the Paris Climate Agreement, the "Nationally determined contribution of the Kyrgyz Republic" was adopted until 2030. In it, Kyrgyzstan pledged to reduce greenhouse gas emissions by almost 16 % by 2030[10].

The Government of the Kyrgyz Republic is striving to carry out socio-economic reforms by adopting the National development strategy for 2018–2040[11], which defines the multifaceted development of economic activities and the promotion of modern and affordable infrastructure, growth and productivity in key sectors of the economy.

The Climate investment program (CIP) has been developed within the framework of the Strategic program of the Kyrgyz Republic on adaptation to climate change[12]. The overall objective of the (CIP) is to serve as a working mechanism for managing access to climate finance in the Kyrgyz Republic, along with integrating aspects of adaptation to climate change and promoting synergies in responding to various climate risks facing the country. The CIP will allow the Cabinet of Ministers of the Kyrgyz Republic to establish a sustainable and consistent process for the development of investment components in the field of climate change adaptation and management, based on existing national policies, sectoral adaptation strategies, concepts and proposals

[9] Greenhouse Gas Emissions in Kyrgyzstan. Available from: https://www.worldviewdata.com/countries/kyrgyzstan/greenhouse-gas-emissions

[10] Updated nationally determined contribution of the Kyrgyz Republic to the Paris Agreement (2021). Available from: https://kyrgyzstan.un.org/sites/default/files/2021-12/%D0%9E%D0%9D%D0%A3%D0%92%20%D0%A0%D0%A3%D0%A1%20%D0%BE%D1%82%2008102021.pdf

[11] National Development Strategy National Development Strategy for 2018-2040 for 2018-2040 (Bishkek, November 2018). Available from: https://mineconom.gov.kg/froala/uploads/file/7ec5fa875f2dcee2aa785af041a6976f096c0295.pdf

[12] Climate Investment Program of the Kyrgyz Republic. Project (Bishkek 2024). Available from: https://climatefinance.kg/wp-content/uploads/2024/03/cip.pdf

developed by relevant ministries with the support of development partners, coordinating and supplementing them.

The CIP identifies both long-term and priority investments that will bring additional benefits by deepening knowledge in the Kyrgyz Republic about climate risks and enhance climate resilience and adaptive capacity in key sectors. It defines (i) the portfolio of long-term investment projects for adaptation to climate change and (ii) the proposed list of investment priorities, which in the future should be translated into full-scale concepts and full-value financing proposals under the leadership of the Center for climate finance. The portfolio of proposed investments reflects the concept of adaptation to climate change in the form of a long-term process, in which some activities are implemented in the near future, while others require longer planning and preparation (for example, related to infrastructure, the anthropogenic environment and industrial sectors).

The Republic is seeking support from the GCF, which provides support to national and regional climate projects, as well as expert and technical assistance both in the process of their preparation and implementation, including projects of the Fund itself[13]. Cooperation with him makes it possible to find additional resources to solve problems, including those directly related to climate change and negatively affecting the state of agriculture and rural incomes. It is aimed at enhancing climate financing of national projects and is fully consistent with the tasks set by the Cabinet of Ministers to the Ministry of natural resources, ecology and technical supervision of the Kyrgyz Republic and other government agencies to solve the problem of increasing financial assistance in the development and implementation of climate projects. The Ministry of natural resources, ecology and technical supervision of the Kyrgyz Republic is the national authorized body (NAB) which provides a connection between the country and the GCF.

In addition, the State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic is working to strengthen and expand cooperation with the Fund. The Agency engages stakeholders in this process, discussing with them issues related to ensuring effective and efficient access, management, use, and monitoring of climate change and the financial resources allocated to the Kyrgyz Republic by the Fund. This also includes developing project proposals jointly with international organizations, which are then submitted to the Fund for consideration for grant funding.

The Center for climate finance continues to work to support the process of developing climate design ideas, which are developed by working groups established on the basis of government agencies, local government bodies and interested organizations[14]. The presented climate design ideas are being worked out together with experts and consultants in order to match the templates that come from the Found. The available project ideas are entered by the Center for climate finance in the Climate register.

Directly related to the climate agenda was the allocation by the Fund of $8.5 million as co-financing of a grant in the amount of $ 10 million for activities aimed at adapting to climate change in terms of improving food security and nutrition[15]. The UN World Food Programme became a participant in the events, and FAO acted as an accredited structure.

As part of Component 1 "Improving the quality of climate services" of the National climate investment program, the project "Climate services and diversification of climate-sensitive livelihoods to empower vulnerable and food-insecure communities in the Kyrgyz Republic (2021–2024, $8.6 million)" is being implemented at the expense of the GCF[16]. The relevance of this project is determined by the significant exposure of the Kyrgyz food system to climate change, which is primarily experienced by low-income families living in rural areas. Implementing organizations is followings: Ministry of emergency situations (Kyrgyz Hydromet); Ministry of social development and labor; Ministry of water resources, agriculture and processing industry.

The project is aimed at:

- climate servicing the support vulnerable rural communities in planning and managing climate risks related to climate change;

[13] GCF. Projects&Programmes. Kyrgyzstan. Available from: https://www.greenclimate.fund/countries/kyrgyzstan

[14] -The Ministry of Natural Resources continues to develop climate projects (2.02.2023). Available from: https://www.vb.kg/doc/426874_v_minprirody_prodoljaetsia_razrabotka_klimaticheskih_proektov.html

[15] The Green Climate Fund allocates $10 million to Kyrgyzstan in order to improve nutrition in the country (04.12.2018). Available from: https://dairynews.today/news/zelenyy-klimaticheskiy-fond-vydelyaet-10-mln-kirgi.html

[16] GCF. SAP002 “Climate services and diversification of climate sensitive livelihoods to empower food insecure and vulnerable communities in the Kyrgyz Republic” (22.12.2021–22.12.2025). Available from: https://www.greenclimate.fund/project/sap002

- strengthening and diversifying livelihoods to enhance the adaptive capacity of vulnerable groups and enhance community resilience;
- capacity-building and decision-making support for enhanced action to combat climate change using a multi-sectoral approach.

Thanks to the grant support of the Fund, small farms, the number of which should be about 100 thousand people, will have access to effective practices that can improve the situation in the field of food security.

Another FAO project on forest and pasture restoration in Kyrgyzstan aims to promote the development of a low-carbon and climate-resilient economy. The fact is that rural households in Kyrgyzstan are significantly affected by climate change as a result of rising temperatures and frequent changes in precipitation patterns, which resulted in an increased risk of floods and mudslides in spring, and severe drought in summer. According to statistics, more than 40 % of agricultural land in Kyrgyzstan has been seriously affected by degradation, and more than 85 % of its entire territory is affected by severe erosion due to improper management of pastures and forests. This problem is exacerbated by the effects of climate change. A significant problem also lies in the fact that overgrazing has reduced the forests on the mountain slopes as a result of irrational logging on the mountain slopes. The republic has strongly expressed the need to restore land and forest resources against the background of the demand for methods and means of adaptation to a changing climate. According to the National Forest Inventory conducted in 2008–2010 with the support of FAO, forests in Kyrgyzstan cover 5.6 % of the country's territory (more than one million hectares) [17].

The FAO cross-sectoral project "Increasing carbon sequestration in Kyrgyzstan by supporting climate investments in forests and rangelands" "Carbon sequestration through climate investments in forests and pastures", supported by the Fund at the grant level of $ 30 million[18], aims to promote the development of a low-carbon economy and resistant to climate change. This project corresponds to Component No. 2 "Improving the resilience of agriculture to climate change in order to ensure food security" of the National climate investment program.

The main target group of the project is all users of pasture and forest resources in the target area of the four project districts (Ak-Talin, Toguztorou, Uzgen and Suzak) in the selected three regions (Naryn, Jalalabad and Osh regions). These territories were selected as a project group due to the severe degradation of pasture lands and forest areas. Thanks to a grant of $30 million from the GCF and $20 million received from other project partners (the Ministry of natural resources, ecology and technical supervision of the Kyrgyz Republic, the Russian-Kyrgyz Development Fund and the Kyrgyz Community development and investment agency), measures will be taken to restore forest cover and increase productivity pasture lands, which will increase carbon sequestration and ensure the stability of natural ecosystems. This can strengthen the overall economic sustainability of the stability of the native ecosystems of the agricultural sector. Encouraged green solutions are sequestration, or sequestration, methods, which represent long-term carbon storage in plants, soil, geological formations, or the ocean. In addition, forest plantations will become an effective tool for preventing and reducing the risks of natural disasters, including landslides and mudslides, which are quite common in Kyrgyzstan.

As follows from the documentation of the project approved on November 14, 2019[19], the results should be a reduction in the impact of factors causing land degradation and emissions caused by them, based on the support of national institutions, sustainable management of natural resources based on an ecosystem approach and investments in green growth. As a consequence, this will have the introduction of integrated planning of pasture lands and forest resources that capture carbon, and support the diversification of income-generating activities. It is expected that due to the implementation of the project, over 19.8 million tons of CO2 will be sequestered over 20 years, which in turn accounts for 7.6 % of the total emissions in the country and 22.6 % of agricultural emissions. Forest plantations will also become an effective tool for preventing and reducing the risks of natural disasters, including

[17] Forests in Kyrgyzstan are increasing, due to what? Excursion to the laboratories of the GAOSLC (05.10.2018). Available from: http://ecopartner.org/%D0%BB%D0%B5%D1%81%D0%B0-%D0%B2-%D0%BA%D1%8B%D1%80%D0%B3%D1%8B%D0%B7%D1%81%D1%82%D0%B0%D0%BD%D0%B5-%D1%83%D0%B2%D0%B5%D0%BB%D0%B8%D1%87%D0%B8%D0%B2%D0%B0%D1%8E%D1%82%D1%81%D1%8F-%D0%B7%D0%B0-%D1%81/

[18] The Green Climate Fund will allocate $50 million for the restoration of forests and pastures in Kyrgyzstan (November 14, 2019). Available from: URL: https://news.un.org/ru/story/2019/11/1367161

[19] GCF. FP116. “Increasing carbon sequestration in Kyrgyzstan by supporting climate investments in forests and rangelands” (2023-2030, 30,000 000 USD). Available from: https://www.greenclimate.fund/project/fp116

landslides and mudslides, which are most widespread in Kyrgyzstan.

It is assumed that the project will contribute to the absorption of about 27.6 million tons of CO2 equivalent, through:

- reforestation of 6 thousand hectares of severely damaged forests,
- restoration/rehabilitation of approximately 644 thousand hectares of degraded pastures,
- improved management of approximately 56 thousand hectares of forests,
- increased resistance to climate change.

The implementation of the project will allow vulnerable rural communities, and more precisely, approximately 90 thousand vulnerable families in the project area, to effectively manage climate risks and diversify their livelihoods.

As a result of this project, the foundations will be laid for the creation of pilot carbon landfills, the introduction of sectoral tools for monitoring and verification of greenhouse gases. In the future, this will allow us to create a scientific evidence base for calculating the absorption capacity of the vast territory of our country. The project, if successfully implemented, can become the basis for achieving climate ambitions, creating new approaches and discovering new potential of pastures and forests. The absorbed volumes of greenhouse gases can potentially create carbon quotas free for trade within the framework of the Paris Agreement, exceeding the climate target declared by the Kyrgyz Republic. And this is a completely new financial instrument and an opportunity to capitalize on sustainable economic development.

As mentioned above, one of the latest initiatives should be the decision of the GCF to allocate $2.6 million to Kyrgyzstan in order to develop the National plan for adaptation to climate change (2020) [20]. Within the framework of the UNDP–GCF project "Advancing the process of developing a National adaptation plan/ for medium- and long-term planning and implementation of adaptation measures to climate change in the Kyrgyz Republic", risk and vulnerability assessments are being conducted, as well as adaptation plans for 4 sectors are being developed - "Emergencies", "Health", "Agriculture and irrigation", "Conservation of biodiversity".

As the monitoring of the interim results of the project showed, an extensive analysis of climatic, sectoral and socio-economic data on agriculture, emergencies, biodiversity conservation and health was undertaken, as well as an assessment of the feasibility and adaptation options were formulated[21]. The project at the current stage of its implementation has led to strengthening the capacity of line ministries and their regional structures. The interim results include the development of four sectoral adaptation plans and adaptation action plans for further integration into the development plans of Osh, Batken and Jalal-Abad regions through the prism of four sectors. The National statistical committee and the Hydrometeorological service under the Ministry of emergency situations of the Kyrgyz Republic have been supported in improving the climate change statistics system. And, importantly, with the participation of all stakeholders, a guide has been developed to integrate gender perspectives into climate change adaptation processes.

In addition to these projects, Kyrgyzstan was among the countries participating in the second stage of the SRMI-Resilience project, supported by the Fund for Risk Reduction of Sustainable Renewable Energy Sources (Solar Risk Mitigation Initiative /SRMI). GCF finances 14.3% of the project budget[22], while the rest of the costs were borne by the International Bank for Reconstruction and Development. In this regard, we recall that Kyrgyzstan is pursuing an active policy on the development of the renewable energy segment. Accordingly, this involves attracting financial and investment resources not only from internal, but also from external sources.

SRMI was developed by the World Bank as part of the Energy Sector Management Assistance Program

[20] The Green Climate Fund will allocate $2.6 million to Kyrgyzstan for the development of a National Plan for Adaptation to Climate Change (2020). Available from: http://greeneconomy.kg/zelenyj-klimaticheskij-fond-vydelit-kyrgyzstanu-26-mln-na-razrabotku-naczionalnogo-plana-po-adaptaczii-k-izmeneniyu-klimata/

[21] Discussion of interim results of national adaptation plans and adaptation measures to climate change in the Kyrgyz Republic (06.05.2024). Available from: https://centralasiaclimateportal.org/ru/%D0%BE%D0%B1%D1%81%D1%83%D0%B6%D0%B4%D0%B5%D0%BD%D0%B8%D0%B5-%D0%BF%D1%80%D0%BE%D0%BC%D0%B5%D0%B6%D1%83%D1%82%D0%BE%D1%87%D0%BD%D1%8B%D1%85-%D1%80%D0%B5%D0%B7%D1%83%D0%BB%D1%8C%D1%82%D0%B0%D1%82%D0%BE/ и

[22] Sustainable Renewables Risk Mitigation Initiative (SRMI) Facility (Phase 2 Resilience focus) [SRMI-Resilience]. Decision B.35/05 16/03/2023. Available from: https://www.greenclimate.fund/sites/default/files/document/fp204-world-bank-multiple-countries.pdf

(ESMAP) to address these challenges and offers countries comprehensive financial and technical support. The SRMI Fund aims to provide technical and financial support to nine countries, namely Ethiopia, Guinea-Bissau, Indonesia, Kyrgyzstan, Mongolia, Seychelles, Somalia, Tajikistan and Tunisia. With international support, nine countries have committed themselves to contribute to reducing greenhouse gas emissions, focusing on their energy sector, which is known to contribute the most and is the main contributing sector.

Hence, the urgency of stimulating green projects through concessional financing increases. The second phase of the SRMI-Resilience project aims to support the energy transition in nine developing countries by increasing access to affordable, reliable, modern and sustainable electricity. On March 6, 2024, by decision B.38/01 of the Fund's Council, a program for financing the development of electric transport was approved, which will be implemented in a number of countries – Armenia, Georgia, Indonesia, Kazakhstan, Nepal, Uzbekistan, as well as Kyrgyzstan in the amount of USD 169, 920,000[23]. The main donor is Asian Development Bank. The co-financing of the CCF will amount to 37.4 %.

7.2. Areas of Strengthening the Capacity to Interact with the GCF

For several years, Kyrgyzstan has been developing a draft Country Cooperation Program with the Fund for the period 2024–2027 as part of the readiness program, which will enable interaction with the Fund on a solid institutional basis. The program was approved on July 1, 2025, in Bishkek at a meeting of the Coordination Council on Climate Change, Ecology, and Sustainable Development[24]. The document enshrines the country's priority climate policy areas and specifies a list of projects requiring financing from international sources. Thus, the country's focus on developing partnerships with global financial institutions for the implementation of environmentally significant initiatives was once again confirmed. In this regard, interaction with the Fund not only allows for the attraction of financial resources, but also strengthens the country's institutional capacity in terms of integration into the international climate finance system.

Kyrgyzstan is currently developing a "Readiness" program, which will facilitate engagement with the Green Climate Fund (GCF) on a solid institutional foundation. The program will encompass training initiatives, the strengthening of institutional and human resources, and the development of strategies and monitoring systems. This will improve coordination among relevant national stakeholders while simultaneously ensuring readiness to access GCF resources.

The accreditation of the Community Development and Investment Agency of the Kyrgyz Republic (ACDI) provided a significant impetus for further cooperation[25]. This agency became one of the first organizations in Central Asia to receive accreditation from the GCF. As a result, ACDI was able to independently submit projects to the Fund. Previously, Kyrgyzstan could only submit project applications through specialized international organizations accredited by the Fund. Accreditation Decision was made at the 38th meeting of the CCF Council (March 4-7, 2024, Kigali, Rwanda). The Climate finance center provided assistance in this process. In addition, the Fund has now recognized EldikBank, known for being Kyrgyzstan's leading financial institution in the field of sustainable development, as a worthy candidate for accreditation[26]. EldikBank actively supports initiatives aimed at addressing environmental and climate challenges. In addition to this, work is underway to accredit the State Development Bank of the Kyrgyz Republic and ABank.

The steps taken have become towards strengthening the country's potential in the field of climate finance mobilization. The condition for this mobilization is the development of the potential for the preparation of relevant climate projects and the management of their implementation. In connection with these plans, on June 25, 2024, the Center of climate finance, together with the Ministry of nature in the Kyrgyz Republic, with the technical support of the German Development Agency, held an introductory seminar "Strengthening the capacity of Kyrgyzstan to manage the process of climate finance

[23] FP225: E-Mobility Program (Armenia, Georgia, Indonesia, Kazakhstan, Kyrgyzstan, Nepal, Uzbekistan). Available from: https://www.greenclimate.fund/sites/default/files/document/fp225-adb-e-mobility.pdf

[24] Kyrgyz Republic Green Climate Fund Country program 2024 – 2027 (July 01, 2025). Available from: https://www.greenclimate.fund/sites/default/files/documents/2026-09/kyrgyz-republic-country-programme.pdf; Note: Kyrgyzstan approved a cooperation program with the Green Climate Fund until 2027. Available from: https://mes.kg/news/20250710-kirgiziya-utverdila-programmu-sotrudnichestva-s-zelyonym-klimaticheskim-fondom-do-2027-goda.

[25] Community Development and Investment Agencies of the Kyrgyz Republic. Available from: https://www.aris.kg/

[26] EldikBank – a conduit for climate investments in the Kyrgyz Republic (18.11. 2024). Available from: https://eldik.kg/ru/news/eldik-bank-provodnik-klimaticheskih-investicij-v-k?for_who=individual

and prepare high-quality projects"[27]. It addressed the issues of developing a preparedness program within the framework of the preparatory support of the GCF, as well as key issues of climate finance management and project preparation in accordance with international standards and requirements imposed by the Fund.

As can be seen, Kyrgyzstan is involved in interaction with the Fund to a high degree of intensity. And this is not only the activity of developing and implementing projects, but also holding various events aimed at strengthening business ties. For example, on December 17, 2019, a seminar was held with the participation of experts on interaction with the CCF[28]. The purpose of the event was to familiarize experts representing line ministries with the procedure for evaluating project applications, as well as with the national “no objection” procedure. Meetings of representatives of state bodies of the Republic and representatives of the expert community are also held to mark the launch of projects. So, about a hundred representatives of government agencies and the expert community took part in a seminar today, designed to mark the start of a carbon sequestration project in the Kyrgyz Republic[29]. The participants of the seminar emphasized that the project marks a fairly new approach in the management of forests and pastures in Kyrgyzstan, which aims to establish a balance between, on the one hand, the growth of well-being, and, on the other, the preservation of native wealth.

An important event was the holding of the first consultative meeting of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic with representatives of the GCF on March 6, 2023[30]. The discussion focused on the promotion of climate projects and their support from the GCF, which undoubtedly implies further strengthening the potential of Kyrgyzstan's interaction with the Fund.

The continuation of the line on strengthening interaction was the visit to Kyrgyzstan of the regional manager of the CGF for Eastern Europe and Central Asia, a representative of the GCF to Kyrgyzstan, which took place on June 3, 2024[31]. During a series of meetings, the regional manager of the CGF discussed with interested parties the key aspects of cooperation, which include the country program and the portfolio of climate projects. The focus of attention was on the issues of further accreditation of national institutes and development banks under the CGF.

It's worth noting, however, that ACDI's accreditation conditions stipulate that the agency can expect to receive grants of up to $50 million. However, these conditions limit the implementation of large-scale initiatives, especially since the Fund limits the number of supported projects within country programs. For Kyrgyzstan, this is no more than five projects within one program cycle. National circles believe this limits the country's ability to achieve its climate goals. For this reason, a proposal has been made to the Fund to increase the number of supported projects[32]. This proposal is under consideration, but the Fund has confirmed its commitment to supporting projects in the following key areas: agriculture and food security, promoting sustainable agroecology, facilitating the provision of climate-sensitive advisory services and risk management, and improving water conservation and water efficiency.

The most recent official meeting took place in October 2026. As part of a regional dialogue between the GCF and countries in Eastern Europe and Central Asia, Akil Toktobaev, Minister of Natural Resources, Ecology and Technical Supervision, met with GCF Regional Director Thomas Eriksson[33]. The discussion focused on expanding Kyrgyzstan’s access to climate finance and developing a national portfolio of climate projects. Particular attention was paid to the activities of nationally accredited entities – ARIS and Eldik Bank OJSC – as well as the ongoing efforts of the State Development Bank of the Kyrgyz Republic and ABank to secure GCF accreditation. Furthermore, the parties discussed the development of a "Readiness Programme," which is expected to incorporate six projects for Kyrgyzstan in 2027.

[27] Strengthening the capacity of Kyrgyzstan to manage the climate finance process and prepare high-quality projects (06.24.2024). Available from: https://climatefinance.kg/news/ukreplenie-potencziala-kyrgyzstana-po-upravleniyu-proczessom-klimaticheskogo-finansirovaniya-i-podgotovke-kachestvennyh-proektov/

[28] A seminar for the technical expert group of the Green Climate Fund project was held in Bishkek today (17.12.2019). Available from: http://www.caiag.kg/ru/novosti/333-zelenii-klimat-fond-ru

[29] A forest and pasture restoration project is being implemented in Kyrgyzstan (04.12.2023). Available from: https://eco.akipress.org/news:1900502/?from=kgnews&place=maincats

[30] The Ministry of Natural Resources held the first consultative meeting with representatives of the Green Climate Fund (03/6/2023). Available from: https://climatefinance.kg/news/testovaya-novost-2023/

[31] Regional visit of the representative of the Green Climate Fund to Kyrgyzstan (06.03.2024). Available from: Available from: https://climatefinance.kg/news/regionalnyj-vizit-predstavitelya-zelyonogo-klimaticheskogo-fonda-v-kyrgyzstan/

[32] The Green Climate Fund - a reliable partner for environmental projects in Kyrgyzstan (November 15, 2024). Available from: https://mnr.gov.kg/ru/posts/news/zelenyi-klimaticeskii-fond-nadeznyi-partner-dlya-ekologiceskix-proektov-kyrgyzstana

[33] Kyrgyzstan and the Green Climate Fund Discuss Expanding Climate Finance (October 8, 2026). Available from: https://centralasiaclimateportal.org/kyrgyzstan-and-the-green-climate-fund-discuss-expanding-climate-finance/

8. KAZAKHSTAN AND THE GREEN CLIMATE FUND

8.1. Project Cooperation between Kazakhstan and the GCF

In 2024, greenhouse gas emissions in Kazakhstan was 330.4, 158th of 186 countries; up from 288.1 in 2019[34]. Today, Kazakhstan is among the countries actively striving to implement a sustainable development model and transition to a green economy. This is provided for by the Strategy to Achieve Carbon Neutrality by 2060[35], which involves a number of measures to eliminate dependence on fossil fuels, including by identifying key areas of technological development and infrastructure solutions as one of the pillars of the transition to a climate-neutral economy. Kazakhstan, as a country with rich natural resources, attaches special importance to environmental sustainability issues and recognizes the need to take urgent measures to combat climate change.

The country places particular emphasis on environmental protection, including the preservation and enhancement of forest resources and the rational use of diverse natural resources. Under the auspices of the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan and the International Center for Green Technologies and Investment Projects (ICGTIP), and through a partnership with the United Nations Industrial Development Organization (UNIDO) and with the support of the Global Environment Facility (GEF), Kazakhstan is implementing the Kazakhstan Global Cleantech Innovation Programme (GCIP) [36] . The implementing organization is the International Center for Green Technologies and Investment Projects of Kazakhstan. The program has demonstrated practical results in the development of local climate entrepreneurship and its contribution to the transition to sustainable development. Overall, the country strives to integrate into global environmental processes, which are also currently characterized by the increasing importance of national experience in green and climate technologies.

The accession to the Paris Agreement took place in August 2016. In its updated nationally determined contribution to the global response to climate change[37], the Government of Kazakhstan has set an unconditional goal of reducing greenhouse gas emissions by 15 % by the end of 2030 relative to the emissions level of the 1990 baseline. The conditional goal is to reduce GHGs emissions by 25 % by the end of 2030 relative to the level of emissions of the base year 1990, subject to significant additional international investments and significant grant assistance, access to an international technology transfer mechanism, co-financing and participation in international research projects, development work of promising low-carbon technologies and initiatives to build local expertise.

Currently, Kazakhstan accounts for the largest sources of greenhouse gas emissions in Central Asia. This is due to the fact that about 90 % of the country's electricity is generated from fossil fuels. In general, coal accounts for 72 % of the satisfaction of energy needs. Therefore, the key task of Kazakhstan is to abandon dependence on coal-fired power plants and search for new sources of energy generation, the need for which will only increase.

Kazakhstan's movement towards advanced environmental and sustainable development is supported through the development of a number of systemic initiatives[38]. The transition of the Republic of Kazakhstan to a green economy involves several deep systemic transformations, the purpose of which is ultimately aimed at minimizing the burden on the environment and, most importantly, improving the well-being and quality of life of the population. One of these areas, which the country is currently actively working on, is the greening of industrial enterprises and industries that have a negative impact on the environment, relying on the best available technologies (BAT). The identification of approaches and practices as bats for a specific field of application is carried out through the development of BAT reference books.

The transition to green energy is key to Kazakhstan's climate policy. One of the challenges of this transition is the predominance of coal-fired thermal power plants, which produce 72 % of the country's total energy. Against this backdrop, Kazakhstan's significant renewable energy potential remains untapped. As such, the transition to green energy (solar and wind) and small hydropower, while simultaneously developing and modernizing the

[34] Greenhouse Gas Emissions in Kazakhstan. Available from: https://www.worldviewdata.com/countries/kazakhstan/greenhouse-gas-emissions

[35] The doctrine (strategy) of achieving carbon neutrality of the Republic of Kazakhstan until 2060. Available from: https://legalacts.egov.kz/npa/view?id=11488215

[36] See: Global Cleantech Innovation Programme of Kazakhstan. Available from: https://igtipc.org/gcip/

[37] Resolution of the Government of the Republic of Kazakhstan dated April 19, 2023 No. 313 "On approval of the updated National Contribution of the Republic of Kazakhstan to the global response to climate change". Available from: https://faolex.fao.org/docs/pdf/kaz220634.pdf.

[38] What are the challenges facing Kazakhstan on the way to a "green" economy (Published: November 18, 2022). Available from: https://www.nur.kz/politics/kazakhstan/1997852-kakie-zadachi-stoyat-pered-kazahstanom-na-puti-k-zelenoy-ekonomike/

corresponding power grids, is being implemented through the attraction of funds from international sources. This largely allows for increased investment in renewable energy sources as a means of supporting the country's strategy for transitioning to a green economy.

As expected by the Kazakh side, on October 2, 2017, a decision was made to allocate $110 million [39] to Kazakhstan for the implementation of renewable energy projects/Renewable energy sources within the framework of the European Bank for Reconstruction and Development (EBRD) Framework Program on renewable energy sources aimed at mitigating the effects of climate change. In turn, the support of the Fund made it possible to increase investments in renewable energy sources as a measure to assist in the implementation of the country's transition strategy to a green economy and, as part of it, to a green economy. One of the problems of this transition is the dominance of coal-fired thermal power plants. Against this background, Kazakhstan's high potential in the field of renewable energy remains not fully realized.

Support for national projects for the development of renewable energy infrastructure in Kazakhstan in the mode of co-financing the special project EP047 by the Fund and the EBRD began in 2018[40]. In fact, the Fund contributes to the implementation of the EBRD Framework Program affecting the field of renewable energy. In addition to providing loans, the Program also provides technical assistance, including in building institutional capacity, as well as in shaping national policy. The amount allocated by the Fund includes concessional financing in the form of loans ($106 million) and subsidies for technical assistance ($4 million).

As part of the $73.5 million co-financing[41], a project was implemented to build a 100 MW solar power plant in Sarani[42], which is the largest green energy facility in Central Asia, which will help reduce CO2 emissions by 93,500 tons per year. The operation of the power plant will ensure a sustainable electricity supply, help reduce greenhouse gas emissions and thus make a significant contribution to achieving the goal of carbon neutrality.

Of course, the financing allocated by the Fund is quite modest compared to the volume of EBRD investments in the development of green energy in Kazakhstan in the amount of 1.7 billion Euro. However, there is a synergy of interaction, as a result of which the private sector will receive credit incentives to expand investments in the development of the renewable energy sector, mainly solar, wind, and small hydropower, as well as in the biogas sector.

The investments of the GCF–EBRD are also aimed at supporting projects involving the development of electricity transmission lines and distribution systems, which will ensure consumers' access to environmentally friendly energy. In general, the implementation of national projects should be resulted in the commissioning of new renewable energy capacities with a capacity of 330 MW. In addition, it is planned to develop an auction system that allows you to choose renewable energy suppliers at an affordable price. At the same time, this means creating conditions for the private sector specializing in the renewable energy sector to enter the electricity markets. Thus, the investments of the GCF will increase investments in this sector and attract low-carbon investors through the investment program and create a viable alternative to cheap coal-based energy.

The second project, under which Kazakhstan receives financial assistance, is part of the program that affects several countries. This is the FP140 program (27.08.2021–27.08.2029) for the development of the corporate sector[43]. The accredited institution is the EBRD. Its relevance lies in the fact that it provides financial assistance in the form of credit lines for the development of low-carbon technologies in the industrial sector. The need for support is due to the fact that currently emissions from the industrial sector account for about 30 % of total global GHGs emissions. This mainly occurs at the stage of extraction of primary materials, their subsequent processing for production and construction, including the production of chemicals and fertilizers, pulp and paper, non-ferrous metals, food industry, etc.

As such, this Program provides assistance to the transformation of energy-intensive industries, agriculture and mining in a number of countries (in addition to Kazakhstan, these are Armenia, Jordan, Morocco, Serbia, Tunisia and Uzbekistan). Once again, we emphasize that the Program is aimed at the transition of industry to a

[39] The Green Climate Fund has allocated $ 110 million to Kazakhstan for the implementation of renewable energy projects (09.10.2017). Available from: http://energo-cis.ru/news/zelenyy_klimaticheskiy_fond/?year=2017

[40] GCF-EBRD Kaakhstan Renewables Framework (08.05.2018-08.05.2023). Supporting the construction of 8-11 renewable energy projects in Kazakhstan, with a total capacity of 330 MW. Available from: https://www.greenclimate.fund/project/fp047

[41] A loan from the EBRD in the amount of 51.3 million US dollars, as well as a loan from the Green Climate Fund in the amount of 22.2 million US dollars.

[42] SES “Saran”. Available from: https://energybase.ru/power-plant/saran-solar-pp

[43] GCF. FP140. “High Impact Programme for the Corporate Sector”. Available from: https://www.greenclimate.fund/project/fp140

low-carbon path of development by promoting the introduction of technologies that have a positive effect in terms of mitigating the impact on climate change, which is complemented by stimulating behavior change at the corporate governance level. In general, the climate change agenda will be taken into account in the process of making strategic, financial and technological decisions. The project, implemented by Kazakhstan within the framework of the Program, is aimed at greening industry and reducing emissions in the production of cement and steel.

As is well known, the activities of international financial institutions are not limited to providing loans for green projects. They also provide a wide range of technical assistance in a variety of areas. In particular, the Fund is supporting Kazakhstan in creating a favorable environment for greening the financial system[44]. This focus includes facilitating the development of appropriate policies, the establishment of national structures for the issuance of green and climate bonds by national issuers, and the attraction of financial resources at preferential rates from foreign sources.

8.2. Kazakhstan Country Programs

A country program plays a key role in any country's cooperation with the Fund. In the case under consideration, Country program is a strategic document that aims to consolidate the priorities of cooperation between the Fund and Kazakhstan, identifying the main areas of work for the coming years[45]. The Program will help interested companies and organizations to identify priority projects that can subsequently be supported by the GCF. At the same time, the project proposals must meet the country priorities, as well as the investment criteria of the GCF. As a result, it has become an important step in preparing Kazakhstan for the effective collaboration with Fund, which will expand opportunities in the field of climate, develop sustainable and innovative solutions, as well as fulfill international commitments in the area of climate change.

The Country program is based on the plans and policies of the Republic of Kazakhstan in the area of sustainable development and climate change. In addition, the Program, lasting up to 18 months, is aimed at strengthening the capacity of the authorized national body with clearly identified priority areas and projects in the field of climate change, and will also strengthen the practice of sustainable investment in the financial sector of Kazakhstan by creating a favorable institutional environment and building the capacity of local experts.

The Country program includes seven projects aimed at reducing greenhouse gas emissions in the energy sector, enhancing the resilience of rural water supply systems, modernizing livestock farms, and supporting "green" initiatives within the private sector[46]. The total budget for the program exceeds 1 billion US dollars, of which the Fund plans to provide approximately 630 million US dollars in financing.

Another key tool for Kazakhstan's long-term cooperation with the GCF is the "Readiness" Country Program. The objective of latter is to strengthen national capacity and create a favorable environment for securing direct access to the GCF, attracting climate-related investments, and fostering a "green" finance ecosystem. While Kazakhstan has long engaged with the Fund through accredited international entities – such as multilateral development banks and other financial institutions – there is now a pressing need to transition toward the accreditation of national organizations, which would enable direct access to the Fund's financial resources. In essence, the "Readiness" Program is intended to serve as an "investment menu" for companies interested in developing "green" finance projects and programs. Furthermore, participation in GCF supported initiatives encourages the development and adoption of new technologies and facilitates the modernization of aging infrastructure.

The official launch of the national project to ensure the readiness of the Republic of Kazakhstan for financing by the GCF "Readiness-II" took place on March 29, 2023[47]. The objectives of "Readiness II" Program include updating the Kazakhstan Country Program to ensure its alignment with the Fund's procedures, establishing a coordination mechanism and assisting organizations in undertaking due diligence and capacity building, preparing applications for accreditation with the Fund, and developing a concept for integrating green finance issues into existing operations of the banking sector and

[44] Kazakhstan and Central Asian countries may be eligible for assistance from the Green Climate Fund (December 4, 2023). Available from: https://forbes.kz/news/newsid_313899?ysclid=mh1mb5j5nb981522118

[45] Country Programme of the Republic of Kazakhstan for the Green Climate Fund for 2024–2027 (11 Sep 2025). Available from:
https://www.greenclimate.fund/sites/default/files/document/country-programme-kazakhstan.pdf

[46] Green Climate Fund. Countries and regions – Republic of Kazakhstan. Available from: https://www.greenclimate.fund/countries/kazakhstan

[47] The country project "Readiness II" has been launched (30.03.2023). Available from: https://www.igtipc.org/ru/press-releases/2089-20230330-063219

financial institutions. “Readiness II” Program provides for the development of the Kazakhstan Country program with a clear framework for priority investments in the area of climate change and a portfolio of projects, as well as strengthening sustainable financing practices in the financial sector of Kazakhstan by creating a favorable institutional environment and capacity-building for financial organizations.

One of the key aspects of the project is the development of partnerships between national institutions, public organizations and the private sector. The project will strengthen the capacity of the country and its national authorized body, represented by the Ministry of ecology, geology and natural resources of the Republic of Kazakhstan, to work with the GCF, which will create favorable conditions for obtaining financial support that contributes to the successful implementation of green projects. The national executive agency ensuring the implementation of the project is the International Center for green technologies and investment projects.

During the development of the draft of “Readiness II”Country Program in Kazakhstan, consultation meetings were held with more than 190 organizations from different sectors of the economy, as well as an online survey of more than 100 domestic companies. As a result, over 20 project proposals were received for financial support of the GCF. Specific recommendations are presented to determine the priorities of the Country program[48].

The main components of the project:

1. The creation of a permanent coordination and advisory council as an official institution providing accreditation of interested national organizations at the GCF, through which access to resources can be obtained.

2. The institutional support and capacity building for direct access applicants to assist them in completing the accreditation process. In order to ensure full national access to the financing of the GCF, it is necessary to pass accreditation, including for subjects of direct access.

3. The building the capacity of local stakeholders, including implementing agencies, civil society organizations and private sector actors, to facilitate the planning, programming and implementation of GCF funded activities.

4. The development of a national regulatory framework for sustainable financing: a roadmap for sustainable financing, a system of reporting on green loans (for example, the inclusion of a green credit attribute, which is a characteristic or feature measured for each observation (record)) and E&S risk management guidelines for the banking sector.

5. The development and strengthening of mechanisms for monitoring and evaluating projects funded by the GCF. This will ensure transparency and efficiency in the use of the financial resources, as well as allow monitoring the results and achievements in the area of combating climate change.

6. The formation of a disaster forecasting system that will provide information about the possibility and strength of impending threats. The use of remote sensing systems at all stages of research and observations will make it possible to assess the scale of natural disasters and make important and accurate management and anti-crisis decisions in the future. It is also possible to use the system to identify specific facilities, zones and population groups that need priority assistance.

In 2024, the Fund has provided support for the development of Kazakhstan’s National Adaptation Plan (NAP) as an initiative implemented by Kazakhstan in partnership with the United Nations Development Programme (UNDP). The National Adaptation Plan focuses on the integrating climate change adaptation into strategic planning, and on the strengthening coordination among government agencies, the establishing databases, and the engaging the private sector[49]. Furthermore, a significant milestone in the institutionalization of the relationship between Kazakhstan and the Fund was the accreditation of the Development Bank of Kazakhstan (DBK), which, in 2024, has developed a "Green and Sustainable Financing Policy" [50]. In 2025, the Fund designated the DBK as a Direct Access Entity (DAE). Consequently, it has become the first institution to gain direct access to funding for climate-related projects at the national level.

In many respects, this served as the catalyst for launching the implementation of Kazakhstan’s

[48] About the Readiness-II project in Kazakhstan (04.14.2023). Available from: https://igtipc.org/ru/projects/20230831-105349/20230901-102400/2339-20230901-104034

[49] Why Does Kazakhstan Need a National Adaptation Plan for Sustainable Development and Combating Climate Change? (Nov 18, 2024). Available from: https://www.undp.org/ru/kazakhstan/stories/pochemu-kazakhstanu-neobkhodim-nacionalnyy-plan-adaptacii-dlya-ustoychivogo-razvitiya-i-borby-s-izmeneniyami-klimata)

[50] Green Climate Fund. Development Bank of Kazakhstan, "Green and Sustainable Financing Policy". Available from: https://www.kdb.kz/sustainable-development/green-climate-fund/

"Readiness III" Country program. The dynamic nature of these developments was further reflected in a new milestone for the program: the establishment of the Qazaqstan Climate Investment Platform (QCIP) in October 2026. The project is valued at over $1 million dollars. The QCIP will function as a dedicated mechanism for coordinating climate-related investments and preparing projects to secure funding from the Fund, the Development Bank of Kazakhstan, and various other international and national financial partners. The platform's primary objective is to facilitate a transition from fragmented technological and project-based initiatives toward comprehensive, well-structured investment projects capable of attracting climate finance from a diverse range of sources..

9. ARMENIA AND THE GREEN CLIMATE FUND

Armenia is another EAEU member state that is actively positioning itself in the field of overcoming global climate problems. In 2024, greenhouse gas emissions in Armenia was 10.8, 50th of 186 countries; up from 9.6 in 2019[51]. Despite the small impact on climate change processes in the global context, Armenia is one of the vulnerable countries in relation to climate change. The temperature rise in Armenia exceeds the global average. Thus, in the period from 1929 to 2016, the average annual temperature increased by 1.23 °C compared to 1961–1990. At the same time, an increase in temperature is accompanied by a decrease in average annual precipitation by 9 %. The negative consequences of climate change include land degradation (77.4 % of Armenia's territory is at risk of desertification), an increase in the number of forest fires, a decrease in yields, and an increase in extreme natural phenomena such as mudflows, strong winds, and droughts. According to the nationally determined contribution of the Republic of Armenia (INDC) of 2015, the emission limit for 2015–2050 is set at 633 million tons, or 5.4 tons per capita. It is also assumed that by 2050 the area of the country's forest cover should increase by 20 %[52]. To do this, it is necessary to plant an additional 270 thousand hectares of forest.

In its updated INDC for 2021–2030. The Republic of Armenia has confirmed its goal to mitigate the effects of climate change by 2050, which is to reduce GHSs emissions to a maximum of 2.07 tons CO2-eq/per capita, which should further be reflected in the Long-term low-emission development strategy (LT-LEDS). The new mitigation target, which is to be achieved in 2030, is to reduce emissions by 40 % compared to 1990 levels.

In the second National environmental action program, climate change is considered as a separate problem related to other issues of the country's development. The strategic program for the Long-term Development of the Republic of Armenia for 2014-2025[53] provides for the introduction of energy-efficient and resource-saving technologies and measures, as well as reducing emissions of pollutants by transport in Yerevan through the development of public electric transport and other types of transport with a low level of emissions. Greenhouse gas emissions are expected to be reduced primarily by expanding energy production based on renewable sources, modernizing thermal power plants, increasing energy efficiency, developing electric transport, reducing methane emissions from solid household waste and wastewater, restoring forests and afforestation of the territory.

The Republic has adopted the Long-term strategy for the development of the Republic of Armenia with low greenhouse gas emissions (until 2050)[54]. This strategy confirms the goal of reducing greenhouse gas emissions to 2.07 tons per capita. The document examines the issues and provides measures to reduce emissions in 5 sectors, such as energy, industrial processes, agriculture, forestry and other land uses, waste.

As a measure to support the development of the economy in the format of reducing carbon emissions, it is planned to introduce mandatory accounting for low-carbon activities using international standards of the International organization for standardization (ISO). The possibility of introducing tax incentives for entities that actively use low-carbon and carbon-free technologies is outlined. And, most importantly, the Government of Armenia has confirmed its commitment to developing a Climate–external debt mechanism. This means attracting additional finance.

Armenia has experience in cooperation with foreign financial donors. Moreover, it expands the range of

[51] Greenhouse Gas Emissions in Armenia. Available from: https://www.worldviewdata.com/countries/armenia/greenhouse-gas-emissions

[52] Analytical review. On the participation of the CIS member States in the Paris Climate Agreement, adopted within the framework of the UN Framework Convention on Climate Change (Moscow 2017). (Annex 3.1). Available from: http://energo-cis.ru/wyswyg/file/RGEEiVIE/%D0%90%D0%BD%D0%B0%D0%BB%D0%B8%D1%82.%20%D0%BE%D0%B1%D0%B7%D0%BE%D1%80%202017.pdf

[53] Armenia Development Strategy for 2014–2025. Annex to RA Government Decree N 442 on 27th of March, 2014. Available from: https://faolex.fao.org/docs/pdf/arm151333.pdf

[54] Decision of the Government of the Republic of Armenia «28» December 2023 N 2318 - L "Long-term low greenhouse gas emission development strategy of the Republic of the Armenia (Until 2050)". Available from: https://unfccc.int/sites/default/files/resource/UNDP%20LT_LEDS_ARMENIA.pdf

financial partners. Such promising partners include GCF, which supports the implementation of projects and programs in Armenia with the participation of UN agencies, the European Bank for Reconstruction and Development, the World Bank, the Global Environment Facility and other international financial organizations. The authorized national body of the Fund is the Ministry of the Environment.

Already in 2016, Armenia received a $20 million grant from GCF to improve the energy efficiency of buildings. The decision was made during the 13th meeting of the Directorate of the Fund. A project "Reducing risks and increasing investments in the modernization of energy-efficient buildings" aims at mitigating climate change[55], which has become an accredited institution of UNDP. Based on the allocation of grants and loans totaling $14 million, the project assumes the solution of the problem of increasing energy efficiency in Armenia through the modernization of buildings.

According to preliminary calculations, the project should contribute to the formation of an energy-efficient building modernization market in Armenia. As a result, this will have significant energy savings and a reduction in greenhouse gas emissions, expected to reach 5.8 million tons of CO2, direct and indirect emission reductions over the 20-year service life of the equipment. In addition, green jobs will be created and the problem of energy poverty will be solved. More than 200,000 people will be beneficiaries, and at the same time, an impetus will be given to the expansion of private and public sector investments in energy efficiency of buildings. In addition to this, the CGF will provide another $6 million in the form of technical assistance to eliminate market and political barriers to the modernization of buildings; UNDP will provide $1.4 million, and the Ministry of Environment of Armenia will provide another $0.4 million. Technical assistance provides for the identification of measures to overcome the lack of information and awareness about the benefits of building modernization through the establishment of measurement, reporting and verification measures, as well as the development of policy frameworks. Private investment is expected to be attracted.

On August 19, 2020, GCF approved the application submitted by Armenia in 2019 for a grant of $10 million to facilitate the implementation of the forest restoration program[56]. FAO has become an accredited institution. The total budget of the project is $18.7 million. The Austrian Development Agency, the Government of the Autonomous Province of Bolzano (Italy), the Government of Armenia and the representative office of the World Wildlife Fund in Armenia are participating in the financing of this project. This cross-cutting project, generally aimed at restoring forest lands based on the use of grant funds, involves the promotion of the creation of modern nurseries for seedlings and the implementation of programs to promote the development of alternative energy in rural regions[57]. In a single "forest–energy" bundle, the project involves the implementation of measures to adapt and mitigate the effects of climate change in two administrative regions of the country that have proved to be the most vulnerable to climate change. These are Lori and Syunika. In fact, this is the first case of financing forestry from external sources.

But that's not the main thing. The main thing is that the project is based on the implementation of an approach that involves, firstly, increasing the role of communities in the management of natural resources, and, secondly, managing them through forest concessions, which will improve the management of the production of fuelwood and non–wood products. From the point of view of the subject of given article, it is important to point out the expected increase in the use of energy-efficient devices in the private sector, as well as in rural households, in order to reduce the burden on natural ecosystems.

Another equally interesting fact of the support from the GCF is the joint cross–sectoral Green Economy Financing Program with the EBRD, which previously sounded like a Program for co-financing sustainable Energy Financing mechanisms (GEFF)[58]. It involves the provision of credit lines to create self-sufficient markets in the field of energy efficiency, renewable energy sources and climate change resilience. This Program involves providing the private sector in 10 countries, such as Georgia, Jordan, Moldova and others, including Armenia, with climate finance through partner financial institutions (PFI).

[55] GCF. FP010. "De-Risking and Scaling-up Investment in Energy Efficient Building Retrofits" (30.06.2017–30.06.2023). Available from: https://www.greenclimate.fund/project/fp010

[56] The Green Climate Fund will provide Armenia with a $10 million grant for forest restoration (August 21, 2020). Available from: https://arka.am/ru/news/society/zelenyy_klimaticheskiy_fond_predostavit_armenii_grant_v_10_mln_na_vosstanovlenie_lesov/

[57] GCF. SAP014. "Forest resilience of Armenia, enhancing adaptation and rural green via mitigation" (04.11.2021–04.11.2029). Available from: https://www.greenclimate.fund/project/sap014

[58] GCF. FP025. "GCF-EBRD SEFF co-financing Programme" (02.02.2018–02.02.2033). Available from: https://www.greenclimate.fund/project/fp025

It should be recognized that public financing of adaptation and mitigation measures alone is clearly not enough. Therefore, the topic of stimulating the expansion of financing from the private sector, especially in the most vulnerable countries, is becoming very relevant. But in the latter cases, the private sector does not have sufficient financial resources. For this reason, the Program involves the provision of large-scale climate finance through private foundations in developing countries, which together will finance more than 20,000 projects in various sectors – industrial, commercial, housing, transport and agriculture. Private financial institutions will issue loans to MSMEs, specialized companies and households for the implementation of projects on energy efficiency, renewable energy sources and climate change resilience. For their part, the CCF and the EBRD will provide technical assistance to local private financial institutions and borrowers, which will increase their potential.

In addition to the above, the GCF not only allocates funds for the implementation of climate projects themselves, but also for the development of the institutional environment for climate finance. In 2020, the Fund allocated a grant in the amount of $660,000 for the development of a green financing system in Armenia[59]. ARMSVISBANK has been appointed as the responsible organization for the implementation of the project[60], which is authorized to carry out the activities provided for in the program and monitor the effective distribution of grant funds. The purpose of the grant funds allocation is to attract the best international and local experts and consultants who will analyze the current situation in the field of green finance in Armenia and at the same time explore the best international experience, for example, the experience of financial beneficiary structures and implemented projects. The final outcome will be a draft roadmap, which will outline the directions for improving regulation of the green finance sector in the republic.

Further. Armenia participates in the cross-sectoral program "Assistance to green cities"[61], the financial instruments of which are loans and grants. The accredited institution is the EBRD. Armenia is among the nine countries (Georgia, Jordan, Moldova, etc.) that, with the support of the GCF and the EBRD, are making the transition of cities to low-carbon, urban development that would be resistant to climate change. However, financial problems stand in the way of sustainability. Therefore, within the framework of the Program under consideration, 10 cities of the participating countries of the project, in which the carbon emission density is above average and faced with a number of environmental and social problems, will have access to financing. The Fund will assist in addressing urban climate change issues by helping to strengthen market conditions for private sector investment in sustainable infrastructure. The concessional financial instruments provided are aimed at stimulating additional investments in sustainable urban infrastructure, for example, in central heating/cooling, low-carbon buildings, and will also contribute to improving solid waste management.

An important event in the cooperation between the Found and Armenia was the approval in 2022 of the project application of the Ministry of the Environment for the inclusion of the Republic in the implementation of one of the regional programs, to which 14 more countries are participants[62]. This Program is based on a framework agreement concluded between the German Society for International Cooperation and the Found. Opening a window of access to financial resources will allow Armenia to more effectively adapt to climate change and mitigate its consequences. As is the case with all projects and programs supported by the GCF, this participation is fully consistent with Armenia's national priorities in the field of sustainable development.

Like Kazakhstan, Armenia participates in projects co-financed by the Fund and the EBRD. As we mentioned, this is the FP140 program (the amount of financing is $1.01 billion)[63]. Its purpose is to assist in the transformation of energy–intensive sectors of the economy, as well as the agro-industrial complex and the mining industry. The peculiarity of the program is that within its framework, the use of low-carbon technologies will receive incentives for development.

As is well known, international financial institutions actively support the development of national plans and strategies. Armenia is no exception here. Since

[59] GCF has allocated funds for its first green finance grant program in Armenia (22.05.2020). Available from: http://www.eecca-water.net/content/view/21806/51/lang,russian/

[60] ArmSwissBank. Available from: https://www.armswissbank.am/

[61] GCF. FP086 “Green Cities Facility” (18.09.2019–18.09.2034). Available from: https://www.greenclimate.fund/project/fp086

[62] The Green Climate Fund (GCF) approved the project application submitted by the Ministry of Environment of the Republic of Armenia (17.01.2022). Available from: http://www.mnp.am/ru/novosti/zelenyj-klimaticheskij-fond-zkf-utverdil-proektnuyu-zayavku-predstavlennuyu-ministerstvom-okruzhayushej-sredy-ra

[63] EBRD and the Green Climate Fund have allocated 1 billion to combat climate change – Armenia is among the beneficiaries. Available from: https://euneighbourseast.eu/ru/news/latest-news/ebrr-i-zelenyj-klimaticheskij-fond-vydelyat-1-mlrd-dollarov-ssha-na-borbu-s-izmeneniem-klimata-armeniya-sredi-beneficziarov/

adaptation measures for climate change are of significant importance in the republic, the National Adaptation Program for 2021–2025 (NAP)[64] was developed with the support of the GCF. The Program was developed within the framework of the project "Preparedness and Training Support" with funding from the GCF of about $3 million through the UNDP office[65]. The allocated funds have made a significant contribution:

- to the task of developing the NAP concept;
- to national adaptation framework for key vulnerable sectors;
- to a financial strategy, as well as tasks to improve climate adaptation and reduce risks in urban and rural communities, gender mainstreaming, training and capacity building, etc.

At the same time, within the framework of this project, $150,000 was allocated for the development and implementation of Armenia's Country Program aimed at achieving readiness to interact with the Fund. An important impetus to the development of cooperation between the parties was the ratification by the National Assembly of the Republic of Armenia at a meeting on January 20, 2021, of the basic Agreement between the Government of the Republic of Armenia and the Green Climate Fund, providing for the main directions of their interaction[66]. The ratification of the document resulted in further strengthening of cooperation with the Fund.

In particular, this cooperation is manifested in the participation of Armenian representatives in various platforms where, together with representatives of the Fund, important issues of climate finance are discussed. For example, on November 8, 2024, an expanded meeting of the Council of the United Nations Development Programme and the GCF (UNDP–GCF) "Reducing the Risks of Investments Aimed at Energy-Efficient Retrofits of Buildings" was held[67]. During the meeting, the achieved progress and the challenges facing the program were discussed in a discussion manner. The meeting was attended by the Minister of Environment of Armenia and Co-Chair of the Program Board Hakob Simidyan, UNDP Resident Representative in Armenia, Co-Chair of the Program Board Natia Natsvlishvili, as well as members of the Board from interested agencies. In his speech, Hakob Simidyan touched upon issues related to both the importance of the program itself and its preliminary results. The importance of the results of the Program implementation for Armenia lies in the fact that its topic relates to the sectoral priorities of the republic. The Program promotes the implementation of Armenia's environmental policy to reduce greenhouse gas emissions, which is simultaneously aimed at fulfilling international climate commitments. In addition, the Program strengthens the country's energy security and promotes the preservation of buildings and the construction stock. It can be assumed that the Program has made a significant contribution to the implementation of Armenia's climate policy, which resulted in the current reduction by December by 2023, CO2 emissions were reduced by approximately 21,000 tons per year, while 157 apartment buildings and 59 public buildings were modernized, improving the well-being of more than 50,000 people.

It should be noted that the Republic's cooperation with the Fund is carried out through programs and projects, with the main financial resources provided by other donors, such as the European Bank for Reconstruction and Development. In this case, the Fund co-finances the relevant programs and projects. So, in December 2024, ARARATBANK and the EBRR signed a $10 million loan agreement, which envisages the promotion of a number of green initiatives in Armenia and increased competitiveness[68]. The loan agreement makes it possible to launch the Program, which Armenia will implement not only jointly with the European Union and the Climate Investment Fund. As such, the financing package includes two tranches of $5 million each. The first will be allocated under the EU4Business-EBRD credit line, and the second – under the Green Economy Financing Facility (GEFF). Under the EU4Business program, borrowers will receive not only grants from the European Union, but also free international consulting services. The loan agreement stipulates that at least 70 % of the loan funds should be allocated to finance the implementation

[64] Decision of the Government of the Republic of Armenia «13» May 2021 N 749-L "National action program of adaptation to climate change and the list of measures for 2021-2025". Available from: https://unfccc.int/sites/default/files/resource/NAP_Armenia.pdf

[65] GCF. Readiness and Preparatory Support Proposal with the United Nations Development Programme (UNDP) for the Republic of Armenia 04 June 2018 | Adaptation Planning. Available from: https://www.greenclimate.fund/sites/default/files/document/readiness-proposals-armenia-undp-adaptation-planning.pdf

[66] Armenia ratified the agreement with the Green Climate Fund (20.01.2021). Available from: https://newsarmenia.am/news/armenia/armeniya-ratifitsirovala-soglashenie-s-zelenym-klimaticheskim-fondom/

[67] An expanded meeting of the Council of the United Nations Development Programme and the Green Climate Fund (UNDP-GCF) "Reducing the Risks of Investments Aimed at Energy-Efficient Retrofits of Buildings" was held (08.10.2024). Available from: https://env.am/ru/novosti/investment-in-energy-efficient-building-retrofits

[68] The EBRD will facilitate the promotion of green initiatives in Armenia (December 15, 2024). Available from: https://www.ritmeurasia.ru/news--2024-12-15--prodvizheniju-v-armenii-zelenyh-iniciativ-budet-sposobstvovat-ebrr-77435.

of green technologies, and 30 % to the development of women's entrepreneurship. ARARATBANK will use the funds received to support micro, small and medium-sized enterprises for to facilitate their transition to competitive, low-carbon, and climate-resilient practices. Overall, since the partnership between ARARATBANK and the EBRR began in 2007, their joint investments in the Armenian economy have totaled over $100 million. This does not include co-financing from the GCF.

One of the ways to deepen cooperation between Armenia and the Fund in expanding international partnerships that foster new investment opportunities is through the development of accreditation. Important steps have been taken in this direction. Thus, as a result of the 41st Annual Meeting of the Fund's Council (February 18, 2025, South Korea), ArmSwissBank received accreditation with the Fund[69]. ArmSwissBank has gained recognition for its programs promoting the development of a green economy in the country. This bank is currently the only private institution accredited by the Fund. The accreditation process was initiated by the Ministry of Environment of Armenia back in 2020. The significance of this bank's accreditation lies in the opportunity it provides the private banking sector to more actively engage in the fight against climate change.

This is reinforced by ArmSwissBank's direct access to the Green Climate Fund. Borrowed funds from the Fund provide additional opportunities for the implementation of the government's program, which aims to adapt the Republic of Armenia to climate change while simultaneously fulfilling international commitments to reduce low-carbon emissions. This, on the one hand, intensifies Armenia's inclusion in the global green agenda, and on the other, achieves positive economic and societal changes in line with the green agenda. ArmSwissBank's accreditation has become a shining example for other Armenian banks, which are also seeking access to the Fund's resources at low interest rates[70].

A significant event for Armenia in 2025 was the hosting of a major international event with an environmental focus. This is the 17th Conference of the Parties to the UN Convention on Biological Diversity (COP17) (October 18-30, 2026). As is well known, the COP has recently become an important platform for the exchange of experiences and the development of measures aimed not only at preserving biodiversity and the sustainability of ecosystems on the planet, but also at effectively addressing climate issues. Hosting this event provides the Republic with a unique opportunity to establish itself internationally as a state committed to achieving sustainable development goals. In this regard, the Fund provided financial and technical assistance to Armenia in holding this event[71].

In summary, it should be emphasized that Armenia is in constant contact with the Fund and is aware of the range of financial, technical, and expert support tools it offers. This toolkit facilitates the implementation of the National Climate Policy, as well as national environmental and sustainable development programs. An important guarantee for their implementation is the Fund's willingness to provide information on best practices in implementing environmental and climate programs and projects in other countries where the Fund operates. Consequently, interaction with the Fund allows Armenia to address issues related to attracting additional green and climate finance. Finally, this interaction provides an important basis for the integration of the republic into the international network of environmental partnerships as such.

In April 2026, the Fund’s Board approved a program for Armenia titled "Scaling up national adaptive capacities for climate change-driven natural hazards through strengthening monitoring and early warning systems." The total value of the program is $10 million[72]. This adaptation program will be implemented by national entities, such as the National Institute of Hydrometeorology and Monitoring and the National Center for Hydrometeorology and Monitoring, under the coordination of the Ministry of Environment. The program entails the creation of a modern, people-centered multi-hazard early warning system by upgrading hydrometeorological observations, strengthening forecasting and data collection systems, improving the dissemination of warnings, and implementing mechanisms for preventive action. Such measures are fully aligned with the goals of the UN’s "Early Warnings

[69] A seminar-discussion on "Accreditation of ArmSwissBank by the Green Climate Fund and its Opportunities" was held (April 3, 2025). Available from: https://env.am/ru/novosti/sostoyalsya-seminar-obsuzhdenie-na-temu-akkreditaciya-armsvisbanka-zelenym-klimaticheskim-fondom-i-ego-vozmozhnosti).

[70] Armenia intends to attract GCF financing for climate projects (04.03.2025). Available from: https://armbanks.am/2025/03/04/261884/.

[71] Arminfo. Involvement of the Green Climate Fund in the UNCCD COP-17 in Armenia (July 30, 2025). Available from: https://ecfs.msu.ru/news/privlechenie-zkf-k-provedeniyu-v-armenii-ks-17-kbo-oon

[72] Green Climate Fund. Scaling up national adaptive capacities for climate change-driven natural hazards through strengthening monitoring and early warning systems (SAP068). Available from: https://www.greenclimate.fund/portfolio/projects/sap068

for All" initiative, which will facilitate a shift from rapid response to proactive, risk-informed preventive action.

An important prerequisite for the implementation of this program, as well as other projects, is the fact that ArmSwissBank has received official accreditation as a partner of the Fund. This decision was reached on February 18, 2025, during the 41st meeting of the Fund's Board. At present, this bank is the first and only private financial institution in the Republic of Armenia with direct access to the Fund's financial resources.

10. RUSSIA AS A VOLUNTARY DONOR TO THE GCF

Unlike other EAEU countries, Russia has specific positions regarding the GCF, in the negotiations on the creation of which it took an active part. Russia's status under the UN Framework Convention on Climate Change does not provide for its financial obligations under the financial mechanism of the Convention. This is due to the fact that donor countries are listed in Annex 2 to the Framework Convention on Climate Change. This includes the OECD member countries, while the transition economies, which include Russia, are included in Annex 1. Nevertheless, Russia provides assistance in the form of voluntary contributions to the Fund, which is complemented by technical assistance and training programs.

Despite the fact that Russia has no financial obligations, in 2020–2022, $10 million was allocated to the Fund[73]. In 2020–2022, at the expense of budgetary allocations from the federal budget in order to assist developing countries in overcoming the consequences of global climate change. This was confirmed by an Agreement between the Russian Ministry of Finance, the GCF and the International Bank for Reconstruction and Development on Contributions to the Trust Fund of the GCF[74]. Thus, Russia has made an undoubted contribution to international efforts to assist developing countries in overcoming the consequences of global climate change. As a voluntary donor, Russia primarily provides assistance to the CIS countries[75]. This is due to the fact that these countries are included in the sphere of Russian influence, as well as participate in integration processes in the post-Soviet space.

Russia can become a full-fledged donor of the Fund when it enters Annex 2 to the Convention. However, so far there is no mechanism for reviewing the composition of these annexes, although the situation has changed significantly since the adoption of the Convention and the annexes, namely, some countries have become members of the OECD, and some have changed their status from developing countries to countries with economies in transition. To date, 10 countries have become members of the OECD, but some of them (non-EU) have no obligations, either under the first or second periods of the Kyoto Protocol, and are listed as developing. Therefore, Russia has submitted a draft amendment to the Convention providing for the possibility of periodic revision of the annexes. Russia can become a full-fledged donor of the Green Climate Fund when it enters Annex 2 to the Convention. However, so far there is no mechanism for reviewing the composition of these annexes, although the situation has changed significantly since the adoption of the Convention and the annexes, namely, some countries have become members of the OECD, and some have changed their status from developing countries to countries with economies in transition. To date, ten countries have become members of the OECD, but some of them (non-EU) have no obligations, either under the first or second periods of the Kyoto Protocol, and are listed as developing. Therefore, Russia has submitted a draft amendment to the Convention providing for the possibility of periodic revision of the annexes.

Under the sanctions, Russia's financial situation has deteriorated. But despite this, within the framework of COP 28, an idea was put forward to use its frozen foreign exchange reserves to finance the United Nations Fund for Assistance to Countries Most Vulnerable and Affected by the Effects of Climate Change (Loss and Damage Fund) at the expense of frozen foreign exchange reserves[76]. The creation of this Fund was agreed on November 30, 2023. It is unlikely that this will be agreed upon.

Russia's positioning as a voluntary donor is a continuation of the logic of support that Russia provides to developing countries to the best of its ability, for

[73] Russia to contribute $10 million to UN Green Climate Fund (17.12.2019). Available from: https://tass.com/economy/1100165

[74] Contribution Agreement with the Russian Federation (GCF-1) (16 November 2020). Available from: https://www.greenclimate.fund/sites/default/files/document/russian-federation-ca-gcf1.pdf

[75] Russia will help the CIS countries within the framework of the Green Climate Fund (21.11.2012). Available from: https://ria.ru/20121121/911644447.html

[76] Russia tries to unfreeze gold reserves for climate funds at COP28 (December 9, 2023). Available from: https://www.reuters.com/sustainability/sustainable-finance-reporting/russia-tries-unfreeze-gold-reserves-climate-funds-cop28-2023-12-09/

example, in the form of debt cancellation within the framework of the “Debt for Development initiative”. In addition, Russia is voluntarily contributing to the financing of global climate initiatives and institutions, including the Intergovernmental Panel on climate change. Assistance is also provided in the field of research and development in the field of climate change.

11. BELARUS AND THE GCF: A FAILED PARTNERSHIP

Without stopping there, Belarus intends to move to a new phase of climate policy in 2025. It based on a revision of national strategies and programs to incorporate climate change issues, as well as the development of new action plans. Resolution of the Council of Ministers of the Republic of Belarus No. 614, dated November 6, 2025, established new national targets: a reduction in greenhouse gas emissions by 2035 of at least 42% compared to 1990 levels[77]. There is planned to review national strategies and programs, to include climate change issues in them, as well as to develop new action plans. It is noteworthy that the climate policy of Belarus is implemented in close cooperation with the United Nations structures[78].

Current programs and projects:

- The Long-Term Low-Greenhouse Gas Emission Development Strategy for 2026–2050 outlines measures to achieve the targets set out in the Nationally Determined Contribution (NDC 3.0) and defines the trajectory for low-carbon development through 2050[79].

- The National Action Plan for Climate Change Adaptation for 2026–2040. This plan was developed in alignment with the Socio-Economic Development Program for 2026–2030 and the National Strategy for Sustainable Development through 2040[80].

- A Monitoring, Reporting, and Verification (MRV) system for greenhouse gases. Established to ensure transparency and accountability in the implementation of climate policy.

- Projects supported by international partners. such as the United Nations Development Programme (UNDP) and the China International Development Cooperation Agency (CIDCA), aimed at strengthening forest fire protection and developing a "green" economy.

If we touch upon the issue of Belarus' cooperation with the Fund, then in 2015 there was an attempt to get a window of access to the Fund's financial resources by submitting an application[81]. The proposed project should be aimed at verifying Belarus' international legal obligations under the Minamata Convention on Mercury. The essence of the planned project was to financially support the process of obtaining statistical data on the number of mercury-containing lamps used in the country.

Indeed, such statistics are necessary in order to implement the fulfillment of international legal obligations under this Convention, which mean the withdrawal of this category of lighting devices from circulation with the simultaneous use of new production technologies, including in lighting technology. It follows from open sources that the application was not supported. In general, on the WKF website, Belarus, as well as Russia, is not mentioned among the states in which country projects are being implemented. This is quite understandable, because the Fund gives priority to working with developing countries. To date, the absence of projects and programs implemented by the GCF in the co-financing mode in Belarus is compensated by cooperation with the Global Environmental Facility.

THE SUMMARY TABLE SHOWS THE FOLLOWING:

- Kyrgyzstan, Kazakhstan, and Armenia are involved in the implementation of a roughly similar number of projects and programs supported by the GCF;
- Kyrgyzstan, Kazakhstan, and Armenia have designated institutional coordinators and accredited national entities;
- In several instances, Kyrgyzstan, Kazakhstan, and Armenia participate in the same programs and projects supported by the Fund;
- Kyrgyzstan, Kazakhstan, and Armenia are implementing country-level cooperation programs with the Fund;

[77] Resolution of the Council of Ministers of the Republic of Belarus No. 614 of November 6, 2025, "On Establishing the Nationally Determined Contribution of the Republic of Belarus to Greenhouse Gas Emission Reductions for 2026–2035". Available from: https://etalonline.by/document/?regnum=c22500614)

[78] Towards the future: Intensifying climate action (23.05.2024). Available from: https://www.undp.org/ru/belarus/news/navstrechu-buduschemu-aktivizaciya-deystviy-v-oblasti-klimata

[79] Long-Term Low-Greenhouse Gas Emission Development Strategy of the Republic of Belarus for 2026–2050 (Draft). Available from: https://forumpravo.by/upload/iblock/7a3/x9ceujia2wrmuxmr9pba1jc32x506s26.pdf

[80] National Action Plan for Climate Change Adaptation of the Republic of Belarus for 2026–2040 (Draft). Available from: https://forumpravo.by/upload/iblock/7a3/x9ceujia2wrmuxmr9pba1jc32x506s26.pdf

[81] The Ministry of Natural Resources of Belarus submitted a pilot project to the Green Climate Fund for financing (16.12.2015). Available from: URL: https://www.belta.by/society/view/minprirody-belarusi-predstavilo-pilotnyj-proekt-v-zelenyj-klimaticheskij-fond-dlja-polucheniya-174380-2015

12. SUMMARY TABLE

Countries of EAEC	Projects and Programs under implementation or approved	Total GCF financing in USD	Readiness support approved in USD	Institutional framework
Kyrgyzstan	9 Climate-resilient Landscapes in Central Asia Approved ()FP322) Resilient Water Systems for All (RWS4All): Deep Adaptation Pathways for Water Infrastructure in Kyrgyz Republic and Tajikistan (FP309) Approved Regional Program: Advancing Climate Resilience & Sustainable Development in Central and West Asia (FP283) Greening Financial Systems: Delivering Climate Finance for All (FP253) E-Mobility Program (FP225) Sustainable Renewables Risk Mitigation Initiative (SRMI) Facility (Phase 2 Resilience focus) [SRMI-Resilience] (FP204) Carbon Sequestration through Climate Investment in Forests and Rangelands in Kyrgyz Republic (CS-FOR) (FP116) Green Cities Facility (FP086) Climate services and diversification of climate sensitive livelihoods to empower food insecure and vulnerable communities in the Kyrgyz Republic (SAP002)	$149 million	$5.3 million	Kyrgyz Republic Green Climate Fund Country program 2024–2027 (July 01, 2025) Country Programme "Readiness" (in development) Accredited National Entities: ARIS (Community Development and Investment Agency of the Kyrgyz Republic); EldikBank. The State Development Bank of the Kyrgyz Republic and ABank (in process) Institutional coordinators: Climate Finance Center; Ministry of Natural Resources, Ecology and Technical Supervision.
Kazakhstan	7 CC Asia Climate Fund (CC-ACF) (FP297). Approved Regional Program: Advancing Climate Resilience & Sustainable Development in Central and West Asia (FP283) Greening Financial Systems: Delivering Climate Finance for All (FP253) E-Mobility Program (FP225) High Impact Programme for the Corporate Sector (FP140) Green Cities Facility (FP096) GCF-EBRD Kazakhstan Renewables Framework (FP047)	$229 million	$4.3 million	Country Programme of the Republic of Kazakhstan for the Green Climate Fund for 2024–2027 (11 Sep 2025) Programme "Readiness III" (under implementation) Accredited National Entity: Development Bank of Kazakhstan (DBK) Institutional coordinators: International Green Technologies and Investment Projects Center (IGTIC); Ministry of Ecology and Natural Resources of the Republic of Kazakhstan.
Armenia	10 Scaling up national adaptive capacities for climate change-driven natural hazards through strengthening monitoring and early warning systems (SAP068) Fueling Green Recovery in Armenia – advancing forest infrastructure and creating sustainable jobs for rural communities (SAP059) Glaciers to Farms (G2F) Regional Program: Advancing Climate Resilience & Sustainable Development in Central and West Asia (FP283) Greening Financial Systems: Delivering Climate Finance for All (FP253) E-Mobility Program (FP225) Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation (SAP014) High Impact Programme for the Corporate Sector (FP140) Green Cities Facility (FP096) GCF-EBRD SEFF Co-financing Programme (FP025) De-Risking and Scaling-up Investment in Energy Efficient Building Retrofits (FP010)	$205 million	$5.9 million	Agreement between the Government of the Republic of Armenia and the Green Climate Fund (December 11, 2018) Armenia's Country Cooperation Program for the Green Climate Fund's (2024–2027) Country Programme "Readiness" (in development) Accredited National Entity: ArmSwissBank Institutional coordinator: Ministry of Environment of Armenia

Russia	-	-	-	Contribution Arrangement with the Russian Federation (IRM) (20 Dec 2018)
Belarus	-	-	-	-

Compiled by the author of the article based on official GCF data

- Regarding the Readiness and Preparatory Support Programme, Kazakhstan is already implementing it, while Kyrgyzstan and Armenia are in the development phase; in all three cases. The Fund has allocated approximately the same amount of financial resources for the development of these country-level readiness programs;
- Among the EAEU member states, only Russia and Armenia have concluded agreements between their governments and the Fund;
- Belarus does not have formal relations with the Fund, but it is interested in establishing cooperation.

13. CONCLUSIONS AND RECOMMENDATIONS

As a result of the study conducted, it was found that there is no uniform positioning of the EAEU member states in relation to the GCF. Three countries of the Union (Kyrgyzstan, Kazakhstan and Armenia) are involved in the implementation of projects co-financed by the Fund. Their cooperation with the Fund creates a favorable environment for expanding sources of foreign climate finance, which simultaneously involves the development of financial institutions and the mobilization of private capital in these countries. At the same time, Russia appears as a voluntary donor, whereas Belarus, by virtue of its status, is outside interaction with the Fund.

Due to this, cooperation with the Fund is not among the formally defined activities of the Union. At the same time, there is no common understanding of the need to coordinate the cooperation of EAEU member states with the Fund and develop a common position. This in no way depends on the fact that Armenia and Kyrgyzstan intend to switch to a carbon-neutral economy by 2050, whereas Russia and Kazakhstan only by 2060. Unfortunately, Belarus has not yet formulated the ways to achieve carbon neutrality. However, it strives to keep up with the deadlines for achieving carbon neutrality, stated in the promises of the leading countries of the world. This country is also characterized by a desire to attract additional external sources of financing.

It should be noted that the resources allocated by the Fund for the implementation of green and climate projects are insignificant. However, they are in synergy with financial support from other international financial structures. The use of external financial resources leads to important results. It seems that the further development of cooperation with the Fund of both the member States and the Union as a whole consists in integration into the international system of green and climate finance.

Of course, the Union, as an integration association that has declared its climate agenda and included the issue of green/climate finance in it, albeit in the most general form, should follow the path of developing an integration system of climate finance, subsidiary to national climate finance systems. In addition to using the resources of the Eurasian Development Bank, we can talk about the formation of a Eurasian Climate Fund in the future. However, it should be understood that such promising processes involve continued cooperation with international financial institutions that have project experience in financing climate projects.

Therefore, it is quite rational to form cooperation between the Eurasian Economic Commission and the GCF up to the conclusion of a Memorandum of Cooperation. As can be seen from the experience of the Union countries, the Fund is open to cooperation. The purpose of such interaction may be to work on the issue of attracting the Fund's funds to finance integration climate projects. In the EAEU, as is known, the discourse of integration green projects has already developed and a high degree of consolidation of positions has been achieved. This is a condition for the allocation of a subgroup of joint climate projects. The Fund has experience in financing projects implemented by several countries.

In the case of the EAEU, these may be joint projects involving three countries – Armenia, Kazakhstan and Kyrgyzstan. Possible projects are based on a common interest in solving climate problems. Projects for the development of alternative energy, the development of green transport, etc., which correspond to the climate and green priorities of the Union as a whole and its member States in particular, can become the most promising for joining efforts. If such projects are developed and approved, which is impossible without the active participation of the Eurasian Economic Commission, Russia may become one of the donors, and Belarus will have the opportunity to intensify cooperation with the Fund on a common platform. The opening of a window of

Theoretical Model of the Interaction Mechanism between the EAEU and the GCF

Political and strategic framework	Regulatory framework	Organizational framework
- Inclusion of issues related to engagement with the GCF in the "Main Directions of the EAEU's International Activity." - Coordination of the policy for engagement between EAEU member states and the GCF. - Development and implementation of multilateral EAEU projects that involve co-financing from the GCF. - Formulation of a strategic approach by EAEU member states toward the joint development of green technologies that may be of interest to countries where projects are supported by the Fund.	- Development and conclusion of a Memorandum of Cooperation and Understanding between the Eurasian Economic Commission and the GCF, which outlines the objectives, areas, and forms of cooperation. - Development and adoption of a Program and a roadmap for cooperation between the EAEU and the GCF.	- Establishment of a Working Group on cooperation between the Eurasian Economic Commission and the GCF; - Participation of Eurasian Economic Commission representatives as observers in the meetings of the Fund's Board, as well as in the work of its thematic groups; - Organization and holding of joint events by the Eurasian Economic Commission.

access to the Fund's resources in order to finance joint green and climate projects will indicate, firstly, that the Union has moved to the stage of implementing projects that are symbols of Eurasian integration, and, secondly, that the climate agenda has passed the stage of its formation.

It seems that the barrier to the implementation of such a scenario is that the climate policy of the EAEU as a whole and the issues of climate finance in its composition are in the process of formation. There is a noticeable lag in comparison with the achieved degree of maturity of the green agenda of the Union. However, the issues of green financing have not yet reached the level of inter-institutional interaction. But, on the other hand, the EAEU member states have entered the phase of forming a mature climate policy. In Armenia, Kazakhstan and Kyrgyzstan, this is happening with the support of the CCF. In fact, the initiation of interaction with the Fund can be initiated not after the formation of the Union's climate agenda, but in parallel with this process. Such a conclusion can be argued as follows.

As could be seen from the analysis of individual cooperation of member states with the GCF, in the vast majority of cases, projects and programs with its participation in the form of co-financing involve stimulating the use of technological solutions that contribute to adaptation to climate change and mitigation of their consequences. Co-financed programs and projects reflect all available categories of programs and projects supported by the Fund. The EAEU countries are no exception here. Supported programs and projects show which technological solutions are needed. Consequently, their list fills in the phrase about the importance of broad international exchange and non-discriminatory use of technologies that ensure emission reduction and low-carbon development from the 2021 Statement on economic cooperation of the member states of the Eurasian Economic Union within the framework of the climate agenda. Therefore, there is a need to develop and implement these technologies together, especially since the Fund encourages their use.

As a matter of fact, all technologies that can be called climate-friendly, in fact, are mentioned in various documents of the Union. In this context, the noted provision of the Statement should be focused on measures to strengthen cooperation in the climate technology sector through monitoring and assessment of technological needs, as well as the development of measures to coordinate cooperation between the EAEU states with the Fund in terms of sharing experience of interaction with it and planned requests for proposals.

Based on the research conducted, the author has developed the proposed theoretical model for the interaction between the EAEU and the GCF.

USE OF AI TOOLS DECLARATION

The author declares that he has not used the Artificial Intelligence (AI) tools in the creation of this article.

AUTHOR'S CONTRIBUTION STATEMENT

The author's contribution includes conceptualization, the development and application of a relevant methodology, and data analysis.

CONFLICT OF INTEREST

The author declares no conflict of interest.

REFERENCES

[1] Andreeva LYu, Vovchenko NG (2017) Institutions and instruments of "green financing": risks and opportunities for sustainable development of the Russian economy. Forestry

Journal 2: 205–214. https://doi.org/10.12737/article_5967eb0ccff307.47958130 (In Russ.).

[2] Arkhipova VV (2017) “Green finance” as a means to solve global problems // Economic Journal of the Higher School of Economics 21(2): 312–322. (In Russ.).

[3] Bank of Russia (2022) Climate risks in changing economic conditions. Report for public consultations. Moscow, 51 p. http://www.cbr.ru/Content/Document/File/143643/Consultation_Paper_21122022.pdf

[4] Bazhenov IN (2018) “Green” financing: global trends and Russian practice. Problems of National Strategy 5(50): 172–186. (In Russ.).

[5] Belousov AL (2022) Legal and organizational aspects of introducing ESG-standards in the Russian banking sector. Russ J Econ Law 16: 577–586. (In Russ.).

[6] Bobylev SN, Kiryushkin PA, Koshkina NR (2021) New priorities for the economy and green financing. Econ Revival Russia 1: 152–166. https://doi.org/10.37930/1990-9780-2021-1-67-152-166 (In Russ.).

[7] Brewer T (2008) Climate change technology transfer: a new paradigm and policy. Climate Policy. 8(5): 516–526.

[8] Doszhan RD., Sabidullina AE., Nurmagambetova AZ., Kozhakhmetova AK (2022) Green financing in Kazakhstan: current state and prospects. Economics: the strategy and practice. 17(4):170 –184. https://doi.org/10.51176/1997-9967-2022-4-170-184 (In Russ.).

[9] Dudin MN, Shkodinskiy SV, Kushnir AM (2022) Prerequisites for expanding green financing and ESG practices in the Russian banking sector. Econ Entrep Law 12: 1301–1322. https://doi.org/10.18334/epp.12.4.114551 (In Russ.).

[10] Emelyanova ES (2022) Climate systemic risks in Europe and the introduction of systemic buffers for mitigating climate risks. Bulletin of the Academy of Knowledge 49(2): 108–116. (In Russ.).

[11] Falcone PM (2020) Environmental regulation and green investments: The role of green finance. International Journal of Green Economics 14(2): 159–173. https://doi.org/10.1504/IJGE.2020.109735

[12] Hafner S, Jones A, Anger-Kraavi A, Pohl J (2019) Closing the green finance gap – A systems perspective. Environmental Innovation and Societal Transitions 34:26–60. https://doi.org/ 10.1016/j.eist.2019.11.007

[13] Kissinger G, Gupta A, Mulder I, Unterstell N (2019) Climate financing needs in the land sector under the Paris Agreement: An assessment of developing country perspectives. Land Use Policy 83: 256–269. https://doi.org/10.1016/j.landusepol.2019.02.007

[14] Kempa L, Zamarioli L, Pauw WP, Çevik C (2021) Financing measures to avert, minimize and address loss and damage: options for the Green Climate Fund. Frankfurt SchoolUNEP Center research paper.

[15] Karimov US (2024) Green finance as a tool to stimulate investments in environmentally sustainable projects. Vestnik universiteta 7: 162–169. (In Russ.).

[16] Kolesnikova KV, Makarova TI (2021) On the issue of the elements of the economic mechanism of environmental protection and environmental management in the EAEU countries. Humanitarian and Legal Studies 1: 161–167. (In Russ.).

[17] Kononovich IV (2023) Green integration - a new stage in the development of the green economy of countries? // Bulletin of the Transbaikal State University 1: 95–103. https://doi.org/10.21209/2227-9245-2023-29-1-95-103 (In Russ.).

[18] Linnenluecke MK., Smith T, McKnight B (2016) Environmental finance: A research agenda for interdisciplinary finance research. Economic Modelling 59: 124–130. https://doi.org/10.1016/j.econ-mod.2016.07.010

[19] Little LR., Hobday AJ, Parslow J, Davies CR., Grafton RQ (2015). Funding climate adaptation strategies with climate derivatives. Climate Risk Management 8: 9–15. https://doi.org/10.1016/j. crm.2015.02.002

[20] Lifshits IM, Smbatyan AS, Saliya MR (2024) Implementation of the Paris Climate Agreement in the Legal Systems of the EAEU Member States. Lex Russica. 77(1): 103–118. https://doi.org/10.17803/1729-5920.2024.206.1.103-118 (In Russ.).

[21] Lottje C, Affana JPB, Eckstein D., Weischer L (2019) Engaging with the Green Climate Fund: A civil society toolkit. Bonn.

[22] Maksimova SYu (2024) “Green” finance: features, instruments, and development challenges. Regional Problems of Economic Transformation 4: 368–375. https://doi.org/10.26726/1812-7096-2024-4-368-375

[23] Malikova OI, Surikov DO (2024) Current state and prospects for developing carbon integration in the Eurasian space. Gosudarstvennoye upravleniye. Elektronnyy vestnik 103: 71–80. https://doi.org/10.55959/MSU2070-1381-103-2024-71-80 (In Russ.).

[24] Maslova SV (2023) Taxonomies of “sustainable development” and “green” projects as legal instruments for achieving sustainable development goals and greening legislation. Legal Research 11: 98–107. https://doi.org/10.25136.2409-7136.202311.69104 (In Russ.).

[25] Migaleva TE, Podbiralina GV, Razumnova LL (2022) Convergence of positions member states of the EAEU on the climate agenda and carbon regulation. Eurasian Integration: Economics, Law, Politics 16(2): 41–50. https://doi.org/10.22394/2073-2929-2022-02-41-50 (In Russ.).

[26] Miroshnichenko OS, Mostovaya NA (2019) “Green” loan as a tool for “green” financing. Finance: theory and practice 23(2): 31–43. https://doi.org/ 10.26794/2587-5671 2019-23-2-31-43 (In Russ.).

[27] Muktadir-Al-Mukit D, Hossain MA (2020) Sustainable development and green financing. A study on the banking sector in Bangladesh. In: Singh A., Reji E. M. (eds.) Social entrepreneurship and sustainable development. 1st ed. Routledge India. Chapter 9. https://doi.org/10.4324/9781003042396-13

[28] Murashko A (2023) Climate risks in the EAEU space: national approaches and joint solutions. Russia and the New States of Eurasia IV (LXI): 217–229.

[29] Panda P (2017) Green bond: A socially responsible investment (SRI) instrument. Research Bulletin 43(1): 97–113. (In Russ.).

[30] Petrosyants TV (2023) Current state of “green” financing in Kazakhstan. Colloquium-journal 29(188), 2023: 31–32. https://doi.org/10.24412/2520-6990-2023-29188-32-33 (In Russ.).

[31] Prudnikova AA (2023) Green financing for achieving sustainable development goals: Current state and prospects. Ekonomika. Nalogi. Pravo = Economics, taxes & law. 16: 16–23. https://doi.org/10.26794/1999-849X-2023-16-3-16-23 (In Russ.).

[32] Porfiryev BV (2016) “Green” trends in the global financial system. World Economy and International Relations 60(9): 5–16. https://doi.org/ 10.20542/0131-2227-2016-60-9-5-16 (In Russ.).

[33] Report of the Institute of Research and Expertise VEB.RF. Using materials from the Eurasian Development Bank, IRIP VAVT, Institute of Economic Forecasting of the Russian Academy of Sciences. (December 2021). Moscow.

[34] Shadiyan MG (2023) Regulation of issues of financing “green” projects in the EAEU countries. State and Municipal Management. Scientific notes. 3: 139–146. https://doi.org/10.22394/2079-1690-2023-1-3-139-146 (In Russ.).

[35] Shugurov MV (2018a) Development of international legal regulation of scientific and technical cooperation and technology transfer in the climate sphere. In: Law and climate of

the planet // Institute of Legislation and Comparative Law under the Government of the Russian Federation / ed. by Yu.A. Tikhomirov. Moscow: Justice, 38–49. (In Russ.).

[36] Shugurov MV (2018b) Promising Policy Efforts on Development and Transfer of environmentally sound technologies. Environmental Policy and Law 48(6):40–410. https://doi.org/10.3233/EPL-180107

[37] Shugurov MV (2019) Green climate fund: supporting the technology development and transfer. In: Proceedings of the roundtables discussion of the XVII Blischenko Congress. Moscow, 243–254.

[38] Shugurov MV (2021) Legal issues of development of cooperation between the EAEU member states in the field of green technologiesю. Agrarian and Land Law. 10(202): 142–144. (In Russ.).

[39] Skobelev DO, Volosatova AA, Guseva TV (2022) Application of the concept of the best available technologies in various systems green financing: international experience and prospects for use in the member states of the Eurasian Economic Union. Bulletin of Eurasian Science 14(2). URL: https://esj.today/PDF/36ECVN222.pdf (In Russ.).

[40] Tarkhanova EA, Fricler AV (2020) Green financing: Global understandings and Russian practices review. Journal of New Economy 21(4): 45–62. https://doi.org/10.29141/2658-5081-2020-21-4-3 (In Russ.).

[41] Vasilyeva EY, Bakrunov YO (2022) Prospects for the development of ESG-financing as an innovative approach to raising resources by Russian companies. Management Account 4–5: 544–551. (In Russ.).

[42] Vinokurov E, Albrecht K, Zaboev A, Klochkova E, Malakhov A, Pereboev V. (2023) Global green agenda in the Eurasian region. Eurasian region in the global green agenda. Almaty: Eurasian Development Bank (In Russ.).

[43] Volosatova AA, Uchenov AA, Skobelev DO (2022) Formation of the concept of introducing the principles of green economy in the Eurasian Economic Union: the role of harmonization of approaches to increasing resource efficiency. Bulletin of Eurasian Science 14(4). URL: https://esj.today/PDF/23ECVN422.pdf (In Russ.).

[44] Yerbolatova DO (2020) Current situation of green financing in Kazakhstan. Scince without borders 4(44): 95–101. (In Russ.).

[45] Yurgens IYu, Romov RB (2023) “Green integration” and the formation of a single sustainable development space in the EAEU format. Moscow: MGIMO. (In Russ.).

[46] Zimina OS, Finogenova YY (2021) ESG impact on the banking sector: new opportunities. Bull Moscow Univ Ministry Int Affairs Russia, 324–330. https://doi.org/10.24412/2073-0454-2021-6-324-330 (In Russ.).

©2026 Mark Shugurov. Published by Journal of Global Economics, Public Policy and Development. This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited. (http://creativecommons.org/licenses/by-nc/4.0/)