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## Overview of International Standards and Russian Legislation on Climate Change Adaptation

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**Abstract.** The article provides a brief overview of international legal standards and Russian legislation in the field of climate change adaptation. Currently, states are adopting the so-called "climate adaptation plans" and "strategies", each of which has its own specifics depending on the country, economics, population and the challenges they are caused by. The author aims to reveal the key provisions of the Convention on Climate Change, the Kyoto Protocol, the Paris Agreement in the context of climate change adaptation, the role of UNEP in the UN system on this issue, as well as the standard forms of "national plans", which are proposed as framework by international organizations. It is concluded that the majority of international treaties do not attempt to impose a single standard of climate adaptation commitments for all countries without exception, but adopt a flexible approach for specific groups of countries. A review of existing practices on this issue is made, depending on the climatic zone and existing domestic institutions. A separate part is devoted to the Russian legal system in the field of climate adaptation, from legal support to the stages of implementation of the national plan.
**Keywords:** *climate adaptation, convention, climate adaptation plan, climate strategy, national law, international law*

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### *International standards for climate change adaptation*

Climate change requires the implementation of climate adaptation plans, which should enable states to quickly respond to the challenges associated with global climate change, which affects not only the biodiversity of ecosystems and infrastructure, but also the health, safety and livelihoods of people. Currently, international law has accumulated quite extensive experience in the field of climate adaptation, and documents of a conventional, declarative and technical nature have been adopted. Russia, as one of the leading global actors, is a country that pursues its own climate adaptation policy, and one of the latest documents, adopted on March 11, 2023, is the "National action plan for the second stage of adaptation to climate change for the period up to


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2025”[1], which will be discussed in the second paragraph of the article after a review of international acts and current global practice on this issue.

### *a. The Convention on Climate Change: key provisions*

The main document of the United Nations (UN) in the field of the environmental agenda related to global climate change is the 1992 UN Framework Convention on Climate Change [2], which has been ratified by 198 states [3], that is, the vast majority of states in the world. The Convention consists of 26 articles, the first 14 of which are directly devoted to terminology, principles, obligations, mechanism and settlement of disputes between states, while the rest deal with technical issues related to amendments, ratification, etc. The first and perhaps most important term mentioned in the Convention is “adverse effects of climate change”, which refers to several “hotspots” of negative impacts on the physical environment and biota, namely: ecosystems, socio-economic systems, health and human well-being. The Convention defines “climate change” as the transformation of the climate system, which is caused exclusively by anthropogenic impact. That is, the Convention does not address issues of natural climate change on the planet, but points to the unconditional human factor. The negative impacts themselves affect not only the biological environment, but also the economy, society and the individual. However, the term “greenhouse gases” under the Convention indicates gaseous constituents of the atmosphere, both anthropogenic and natural, although, as noted above, the treaty focuses on the role of human activity in the global “climate conversion” scenario. The goal of the agreement is to stabilize greenhouse gas emissions into the atmosphere. The key principles are:

- “the principle of equity”, that is, the responsibility of all participating states, without exception, to future generations;
- “the principle of taking into account the needs of developing countries”, obviously due to colonial or other forms of dependence in the past, for which the reduction of air emissions is an economically sensitive topic;
- “the precautionary principle” and refusal to use insufficient scientific uncertainty to justify delaying important actions and decisions;
- “the principle of sustainable development”, which lies in the balance of economic development, and therefore maintaining the quality of life of the population, as well as environmental protection;

[1] Rasporyazhenie Pravitel'stva RF ot 11 marta 2023 goda №559-r “Natsional'nyy plan meropriyatiy vtorogo etapa adaptatsii k izmeneniyam klimata na period do 2025 goda» [Order of the Government of the Russian Federation of March 11, 2023 No. 559-r “National action plan for the second stage of adaptation to climate change for the period until 2025”]. URL: http://government.ru/docs/47971/ (accessed 29 March 2023).

[2] UN Framework Convention on Climate Change. URL: https://www.un.org/ru/documents/decl_conv/conventions/climate_framework_conv.shtml (accessed 29 March 2023).

[3] Status of Ratification of the Convention. United Nations Climate Change. URL: https://unfccc.int/process-and-meetings/the-convention/status-of-ratification-of-the-convention (accessed 29 March 2023).

- "favorable and open international economic system", that is, obviously, an international economy without sanctions pressure and politically motivated decisions that interfere with cooperation between states in the field of business.

The most interesting part of the Convention is undoubtedly the section on the international obligations of states. Since the wording of Article 4 is quite lengthy, it seems important to present them in the most acceptable form, preserving the key ideas and meanings. The following actions are among the obligations of the participating states (not referring to the obligations under the Montreal Protocol [4] and outside the framework of its regulation) (with corresponding brief comments):

- submission of "national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases", which are based on the methodology agreed upon within the framework of the Conference of the Parties;
- introduction of national and regional programs to mitigate the consequences of climate change due to anthropogenic emissions by sources and removals by sinks of all greenhouse gases, that is, a gradual transition to a "green" or otherwise "blue" economy;
- development and transfer of technologies to limit the anthropogenic load associated with greenhouse gases in most sectors of the economy, including energy, transport, industry, agriculture, forestry and waste disposal, that is, a gradual and consistent move away from the "hydrocarbon economy";
- promoting the use of sinks and reservoirs of all greenhouse gases, including biomass, forests and oceans, and other terrestrial, coastal and marine ecosystems, as well as their protection;
- development of preparatory measures for adaptation to climate change, development of comprehensive plans for management of the coastal zone, water resources and agriculture, protection and restoration of areas, especially in Africa, affected by droughts and desertification, as well as floods;
- use of special techniques for assessing the consequences of a potential threat to the environment when implementing socio-economic policy, that is, the so-called "precautionary approach";
- conducting comprehensive scientific research of a wide range of profiles: from technological to socio-economic and, as a result, the creation of data banks related to the climate system in order to prevent negative consequences for the ecosystem in the future;
- exchange of information obtained as part of the research with partner states within the framework of the Agreement;
- international cooperation in the field of education, training, public education.

[4] Montreal Protocol on Substances that Deplete the Ozone Layer. UN. URL: https://www.un.org/ru/documents/decl_conv/conventions/montreal_prot.shtml (accessed 29 March 2023).

These provisions apply to all countries without exception. However, further one can see points that relate specifically to the obligations of developed countries, and the Convention divides them into 2 groups: in Annex I and Annex II. At the same time, obviously based on the events associated with the collapse of the USSR, individual countries of the former Union and the "socialist camp" are marked with a note that concerns their economic "status", namely: "Countries that are undergoing the process of transition to a market economy". In particular, these are countries such as Belarus, Bulgaria, Hungary, Latvia, Lithuania, Poland, the Russian Federation, Romania, Ukraine, Czechoslovakia, Estonia. By 2022, in all likelihood, such a transition has long been completed, since the privatization process in these countries has long been finished.

In general, the Convention does not give an understanding of what criteria are used to determine a country's "development" status, however, at the UN level there is indeed a certain classification created within the framework of UNCTAD (UN Conference on Trade and Development). As noted on the UNCTADstat portal, "all target countries are also divided into developing (1400) and developed (1500) countries". At the same time, it is stated that this categorization was made on the basis of the distinctions between developing and developed regions within the M49 standard. However, the organization states that: "The classification of economies by development status is intended for statistical convenience and does not express a judgment about the level achieved by a particular country or region in the development process. As of December 2021, the United Nations Statistics Division (UNSD) no longer supports the classification of developing and developed regions in M49, but believes that this classification can continue to be applied" [5].

A special group of obligations is defined for the developed states, namely:

- pursuing a national policy to limit the anthropogenic load from greenhouse gas emissions and improve the quality of their sinks and reservoirs of greenhouse gases, in the spirit of leadership as an example for other countries;
- informing about measures taken within the framework of national policy;
- emphasis on the best knowledge of actual absorbent capacity in accordance with the methodology agreed by the Conference of the Parties;
- accountability to the Conference of the Parties;
- coordination of economic and administrative documents between the parties;
- identification of national policy issues related to practices.

The Convention gives the right to any party that is not included in Annex I to accede to the obligations mentioned above, relating primarily to national policies and information.

The Parties that are mentioned in Annex II also have their powers and obligations, in particular:

- provide financial support to developing countries within the framework of obligations under Article 12;

[5] Country classification. UNCTADstat. URL: https://unctadstat.unctad.org/en/classifications.html (accessed 29 March 2023).

- provide financial support to developing countries, which are particularly vulnerable to the negative impacts of climate change, to cover adaptation costs;
- organize the transfer of environmentally friendly technologies and know-how to developing countries.

It notes the role of the Conference in developing a flexible approach towards countries with "transition" economies in order to strengthen their ability to deal with issues related to climate change, including taking into account "historic levels of anthropogenic greenhouse gas emissions". The Convention also identifies a whole group of countries that should receive special attention in the area of financial, economic and other forms of support, as well as on the issue of technology transfer, namely:

- small island countries;
- countries with low-lying coastal areas;
- countries with arid and semi-arid areas, with areas covered by forests and areas where forests are subject to degradation;
- countries with areas prone to natural disasters;
- countries with areas prone to drought and desertification;
- countries with areas of high levels of air pollution in urban areas;
- countries with areas with vulnerable ecosystems, including mountain ecosystems;
- countries whose economies are largely dependent on income derived from the production, processing and export and/or consumption of fossil fuels and related energy-intensive products;
- countries without access to the sea and transit countries.

The Convention pays particular attention to countries whose economies are largely dependent on income derived from the production, processing and export and/or consumption of fossil fuels and related energy-intensive products, and/or the use of fossil fuels in a way that makes it very difficult for such countries to switch to other alternatives. That is, the Convention is not trying to introduce a single standard of obligations for all countries without exception, but approves a flexible approach in relation to groups of countries. Issues of "litigation" when disputes arise between the parties under the Convention are resolved through any means related to the reconciliation of the parties, negotiations, as well as through the International Court of Justice (ICJ) and international arbitration procedures. In addition to country groups, scientists, using sea level rise (SLR) data (which will increase the need for adaptation along low-lying coasts around the world), identify adaptation for 4 "coastal settlement archetypes": urban atolls, Arctic communities, large tropical agricultural deltas, resource-rich cities [1, Magnan A.K. et al.].

### *b. Kyoto Protocol: emission limits*

The Kyoto Protocol to the United Nations Framework Convention on Climate Change (1997) is the second basic instrument for addressing the adverse effects of climate change [6]. It consists of 28 articles and two Annexes (A and B), which specify requirements for the states mentioned in Annex I (first of all) and Annex II of the Convention to emit specific amounts of greenhouse gases at specific times. Appendix A names these greenhouse gases: carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride ($SF^6$), and source and sink sectors and categories (from energy to metallurgy and agriculture). Annex B already contains certain quantitative commitments to limit or reduce emissions (as a percentage of the base year or period) for each country party to the Convention. The protocol established the period of validity of these restrictions until 2012. The Conference of the Parties ("Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP)") is responsible for ensuring the implementation of the protocol. After 2012, the Doha Amendment to the Kyoto Protocol was developed, establishing the extension of the Kyoto Protocol for a further period. The amendment entered into force on December 31, 2020 [7].

### *c. Paris Agreement*

Another important document is one of the latest global agreements, namely the Paris Agreement of 2015, which operates within the framework of the UN Framework Convention on Climate Change, which regulates measures to reduce carbon dioxide in the atmosphere from 2020. The Convention consists of 29 articles; Russia joined it without ratification, since for some time there was an acute socio-political discussion about the limit of greenhouse gas emissions to be reached by Russia by 2030. According to the Convention, this is no more than 70% of the 1990 level. However, already in 2018, this level was only 52%. Since the Russian economy is mainly built on a hydrocarbon model, deputies and industrialists opposed the ratification of the agreement, which, in their opinion, could lead to a slowdown in industrial growth and the country's economy. The main goals of the document were identified:

- keeping the increase in global average temperature well below 2°C above pre-industrial levels and working to limit temperature increases to 1.5°C, recognizing that this would significantly reduce the risks and impacts of climate change;
- increasing the ability to adapt to the adverse impacts of climate change and promoting climate resilience and development with low greenhouse gas emissions so that food production is not compromised;

[6] Kyoto Protocol to the UN Framework Convention on Climate Change. UN. URL: https://www.un.org/ru/documents/decl_conv/conventions/kyoto.shtml (accessed 29 March 2023).
[7] The Doha Amendment. UN. URL: https://unfccc.int/process/the-kyoto-protocol/the-doha-amendment (accessed 29 March 2023).

- aligning financial flows with a trajectory towards low-emission and climate-resilient development.

It is noteworthy that the word “adaptation” appears over 30 times in the document. At the same time, Article 9 explicitly refers to the responsibilities of countries to organize the process of formulating and implementing national adaptation plans. As stated on the UN website, the Paris Agreement has three main objectives:

- limit temperature rise to 1.5 degrees;
- review countries’ contributions to emissions reductions every 5 years;
- provide climate finance to developing countries [8].

The ultimate goal is a transition to a “low-carbon world”. The Conference of the Parties is responsible for ensuring the implementation of the Agreement (Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)).

### *d. UNEP’s role in climate adaptation*

In addition to framework agreements, UN information services provide information to the general public about the adaptation practices of communities and households around the world that help to cope with global climate change. For example, in Vietnam, coastal farmers have moved from harvesting increasingly scarce marine resources (snails and crabs) to developing beekeeping, which is linked to the restoration of mangrove forests. In Bosnia and Herzegovina, farmers have adjusted their crop choices to cope with drought, replacing apples with peaches in warmer weather. In the US, the coastal city of Miami is raising street levels and developing “green infrastructure”. Nigeria has recently experienced a surge in flood-related emergencies, the frequency and impact of which are expected to worsen in the future due to stressors related to land use and climate change. To resolve the issue, planned reforestation, the creation of a reservoir in the city of Dindima and measures for carbon sequestration, that is, the process of transforming carbon in the air (CO2) into soil carbon, are proposed, since carbon dioxide is actively absorbed by plants during the process of photosynthesis [2, Salaudeen A .et al.]. Warming in Sweden affects the movement patterns and grazing of reindeer. Rain and snow significantly worsen the possibilities of adequate nutrition for animals [3, Rosqvist G.C. et al.]. In general, the topic of reindeer husbandry is now more relevant than ever, and this is due to the fact that wild and semi-domesticated reindeer are one of the key species in the Arctic and subarctic regions, and their population dynamics are closely related to winter conditions. Difficult snow conditions reduce calving success and reindeer survival, but the economic impacts of changing winter conditions on reindeer husbandry have not been studied. The results show that severe winters reduce the “net income” from reindeer husbandry. At the same time, they protect lichen grasslands from grazing, thereby increasing fu-

[8] Paris Agreement. UN. URL: https://www.un.org/ru/climatechange/paris-agreement (accessed 29 March 2023).

ture “net income”. Nevertheless, the study shows that variability in winter conditions generally reduces the “net income” of reindeer herders compared to constant winter conditions. Low lichen biomass makes reindeer husbandry more sensitive to the effects of difficult winter conditions. It was also found that it is economically feasible to use supplementary feeding in difficult winters, but net income is still reduced compared to average winters due to the high costs of supplementary feeding. Overall, the analysis shows that increasing variability in winter conditions due to climate change will reduce net income from reindeer herding. This decline will still happen even if the most extreme consequences of climate change do not occur [4, Pekkarinen A.-J. et al.]. Another problem of reindeer husbandry is the closure of national borders in Fennoscandia more than a century ago, which in turn forced reindeer herders to adapt to the new realities. Previously, “transboundary reindeer husbandry” was practiced in this territory. An important adaptation factor is the selection of appropriate food for deer, which could compensate for the lack of natural substances under the conditions of climate change. Local history, strategies of migration and use of pastures by reindeer herders, as well as the biogeography of pastures in summer and winter vary significantly between countries [5, Skarin A. et al.]. Within the framework of UNEP (United Nations Environment Program), about 75 projects on adaptation to climate change have been implemented in more than 50 countries. The total benefits of the projects are reflected in the following points: beneficiaries — 2.5 million people, restored lands — 113.000 hectares, education and new knowledge in the field of adaptation to climate change — coverage of 60 thousand people and 131 institutions, infrastructure — 1.100 watersheds structures, 82 weather stations. The main areas of work in the field of adaptation to climate change are:

- ecosystem adaptation (example: protecting mangrove forests as flood defense; reforestation to combat desertification; protecting rivers and lakes as natural drainage in floods) [9];
- knowledge, analysis, networking (example: “UN Global Adaptation Network”) [10];
- World Adaptation Science Program [11];
- national adaptation plans (example: UNEP supports national plans through the National Adaptation Plan Support Program (NAP - GSP) and the Individual Country Support Program [12]);

[9] Ecosystem-based adaptation. UNEP. URL: https://www.unep.org/explore-topics/climate-action/what-we-do/climate-adaptation/ecosystem-based-adaptation (accessed 29 March 2023).
[10] Global adaptation network. UNEP. URL: https://www.unep.org/explore-topics/climate-action/what-we-do/climate-adaptation/knowledge-analysis-and-networking (accessed 29 March 2023).
[11] World Adaptation Science Programme. UNEP. URL: https://www.unep.org/explore-topics/climate-action/what-we-do/climate-adaptation/world-adaptation-science-programme-0?_ga=2.251391494.1085177075.1667826542-1449996539.1666696331 (accessed 29 March 2023).
[12] National Adaptation Plans. UNEP. URL: https://www.unep.org/explore-topics/climate-action/what-we-do/climate-adaptation/national-adaptation-plans?_ga=2.251391494.1085177075.1667826542-1449996539.1666696331 (accessed 29 March 2023).

- access to adaptation financing (example: broad partnership of three global funds: "Global Environment Facility (GEF)", "UN Green Climate Fund (GCF)", "UNEP Adaptation Fund (AF)", as well as the Recovery Seed Fund, the Tropical Landscapes Finance Facility, the Land Use Finance Program, Agri3 Fund) [13];
- project activities in the field of adaptation to climate change (it is noteworthy that the geography of regions on the UNEP website, where adaptation projects are being implemented, does not include the Arctic, but there is an extremely strong focus on Africa) [14];
- resources and multimedia on adaptation to climate change [15].

In the area of developing national plans for adaptation to climate change, UNEP sees 7 out of 17 sustainable development goals as targets and, accordingly, results [16], namely:

- fight against poverty / no poverty (goal 1);
- affordable and clean energy (goal 7);
- sustainable life in cities and communities / sustainable cities and communities (goal 11);
- responsible consumption and production (goal 12);
- combating climate change / climate action (goal 13);
- marine biodiversity / life below water (goal 14);
- biodiversity on land / life on land (goal 15) [17].

### *e. Models and "steps" for adopting a national adaptation plan*

The Least Developed Countries Expert Group (LEG) [18] analytical review entitled "The National Adaptation Plan Process" suggests models for advancing a national adaptation plan. These include:

- an example of developing a national climate change adaptation plan, where the result is presented in the form of a progress report, technical report, database, strategy, program, etc.;
- specific steps for each element of the plan, which include such elements as assessing climate vulnerability, promoting coordination at the regional level;
- process monitoring, etc.

[13] Access to Adaptation Finance. UNEP. URL: https://www.unep.org/explore-topics/climate-action/what-we-do/climate-adaptation/access-adaptation-finance (accessed 29 March 2023).
[14] Climate Adaptation Project List. UNEP. URL: https://www.unep.org/explore-topics/climate-action/what-we-do/climate-adaptation/climate-adaptation-project-list (accessed 29 March 2023).
[15] Climate Adaptation Resources & Multimedia. UNEP. URL: https://www.unep.org/explore-topics/climate-action/what-we-do/climate-adaptation/climate-adaptation-resources-multimedia (accessed 29 March 2023).
[16] The 17 goals. Department of Economic and Social Affairs. Sustainable development. URL: https://sdgs.un.org/goals (accessed 29 March 2023).
[17] National Adaptation Plans. Ibid.
[18] Least Developed Countries Expert Group (LEG). United Nations Climate Change. URL: https://unfccc.int/LEG (accessed 29 March 2023).

The review then provides an extensive table describing the proposed process for creating a national adaptation plan and the key issues to be addressed at each stage. It seems important to highlight the most interesting of them, which could potentially be applied in our country. In particular, this is a stage "an inventory of all available knowledge about adaptation to climate change." It is noteworthy that in 2021, the Yamal authorities established special awards and grants for scientists who write their master's and doctoral theses on the topic of permafrost science. As TASS notes, "[...] Starting next year, scientists will be able to receive up to 5 million rubles for research in the field of permafrost, the governor of the Yamalo-Nenets Autonomous Okrug Dmitriy Artyukhov told reporters on Wednesday." [19] The importance of these studies is related to the need to protect critical infrastructure, to develop construction technologies that will make it possible to construct buildings as stable as possible and avoid wear and tear of load-bearing structures and pile foundations [6, Melnikov V.P. et al.], to prevent the emergence of epidemics and epizootics associated with climate change, as well as to provide food supply for livestock. The issue of climate adaptation of buildings and structures in similar Arctic latitudes is also on the agenda for foreign partners. In particular, in the city of Longyearbyen on Svalbard, a "techno-fix" adaptation of existing infrastructure to climate change is being carried out. However, many argue that this is definitely not enough, since an environmental approach is needed, including the closure of mines and a focus on an ecologically-safe energy source [7, Meyer A.].

One of the stages of the report is also called a "comprehensive and iterative assessment of needs in the field of climate vulnerability". Based on the questions posed in this step, it is assumed that climate change can have positive consequences that will benefit specific beneficiaries. And these are the ones that are supposed to be identified.

The third table suggests specific activities in the field of the national climate change adaptation plan, which are proposed to include (and this is not a complete list):

- creation of a "road map" in the field of adaptation;
- implementation of specialized adaptation programs, as well as dissemination of information to the widest range of the public and in the education system;
- ranking of risks and vulnerabilities associated with climate change;
- developing individual adaptation options, including the economic, ecosystem and social costs and benefits and potential for unintended (positive and negative) impacts of adaptation measures;
- development of national criteria for determining priorities for the implementation of adaptation measures;

[19] Vlasti YaNAO uchredili premii i granty dlya issledovateley vechnoy merzloty [The authorities of the Yamalo-Nenets Autonomous Okrug have established prizes and grants for permafrost researchers]. URL: https://tass.ru/ekonomika/14853599?utm_source=google.com&utm_medium=organic&utm_campaign=google.com&utm_referrer=google.com (accessed 29 March 2023).

- strengthening and full development of the institutional and regulatory framework for solving adaptation problems in the long term;
- identifying and promoting the possibility of "synergy" with other multilateral environmental agreements in the development of appropriate adaptation plans, etc.

The fourth table of model solutions within the framework of national adaptation plans offers a set of approximate results that can be taken as a guideline in the implementation of state climate policy:

- specific funded project;
- geospatial database in the field of climate change;
- analytical knowledge base in the field of climate change;
- analytical report of gaps and needs;
- scenario of future (or expected) climate change;
- climate risk report, etc.

Finally, another model scheme related to the approval process of a national climate change adaptation plan is proposed. The following scheme for the development and promotion of the national adaptation plan is envisaged:

- A specially created "Initiating body / institution in the field of adaptation" (focus group) sends a report to the Government or Parliament on the proposed adaptation plan based on the Climate Change Convention;
- The government or Parliament, through legislative mechanisms (resolution, order, bill, etc.) prepares the so-called "national mandate" to launch the process of preparing a national plan;
- The "national mandate" descends to the level of a multi-sectoral "National Coordination Centre / Committee / Authority", which should develop a strategy for launching and executing the adaptation plan implementation process; The "National Coordination Centre / Committee / Body" descends the strategy to the level of a multi-sectoral and national "Technical Committee", which in turn prepares "technical support" documents for the strategy (i.e., essentially a mass distribution to the relevant bodies);
- The "technical committee" sends these documents, official letters to the relevant departments and ministries;
- Departments and ministries carry out activities to prepare "sectoral plans" (obviously, with specific deadlines), and send them to the "public, civil society and private sector" for feedback;
- "Public, civil public space and the private sector" (represented by political parties, movements, public organizations, scientific and educational institutions) send their proposals in the form of changes and additions to the "technical committee";

- The “technical committee” in turn prepares “integrated sector plans” with priorities and forwards them to the “National Coordination Centre / Committee / Authority”, which organizes stakeholder feedback and also develops the final draft of the National Climate Change Adaptation Plan ;
- The “National Coordination Centre / Committee / Authority” sends the plan to the Government or Parliament for approval.

These are not all the proposals and formulations that can be found in the analytical review, but the most applied ones are presented here.

One of the main problems in the adoption of such plans is the lack of understanding of what specific “activities” should be carried out at the regional and local levels, since often the central government in a number of countries leaves this issue to the regions, drawing up only a “framework document” with very broad wording [8, Yulandari E.D. et al.].

### *Russian legislation on climate change adaptation: from federal laws and regulations to state programs and GOSTs*

As experts note, unlike the West, Russian climate policy is focused on adaptation rather than mitigation. Detailed recommendations for adaptation to the impacts of climate change issued in 2021 have received increased political attention, but adaptation has largely been framed as a technical challenge. Since 2020, a broader discourse on climate change and adaptation has entered Russian politics, with a focus on the international climate policy and the energy transition. Debate about Russia’s role in the changing energy market has begun, but the Ukrainian crisis and Russia’s subsequent international isolation are likely to weaken its ability and incentives to pursue low-carbon policies. Western countries will have to consider how they can stimulate Russia’s climate policy in the new international situation, since Russia will continue to be important to the success of the climate regime. The importance of science diplomacy can hardly be overestimated [9, Moe A.].

The Russian Federation has a fairly extensive regulatory framework in the field of environmental protection and is consistently taking steps to implement international standards in this area from the legislative and enforcement sides. Among the entire array of acts, it seems important to name the key ones, which are arranged in the framework of the hierarchical principle (from federal legislation to state standards):

- Federal Law dated January 10, 2002 No. 7-FZ “On environmental protection”;
- Decree of the President of the Russian Federation dated February 8, 2021 No. 76 “On measures to implement state scientific and technical policy in the field of environmental development of the Russian Federation and climate change”;
- Decree of the Government of the Russian Federation dated March 24, 2022 No. 455 “On approval of the rules for verifying the results of climate projects”;

- Order of the Government of the Russian Federation dated December 25, 2019 No. 3183-r "On approval of the national action plan for the first stage of adaptation to climate change for the period up to 2022";
- Order of the Ministry of Economic development of Russia dated May 13, 2021 No. 267 "On approval of methodological recommendations and indicators on adaptation to climate change";
- Decree of the Government of the Russian Federation dated February 8, 2022 No. 133 "On approval of the Federal scientific and technical program in the field of environmental development of the Russian Federation and climate change for 2021–2030";
- GOST R ISO 14090-2019 Adaptation to climate change. Principles, requirements and guidelines (September 12, 2019);
- GOST R 54139-2010 Environmental management. Guidance on the application of organizational security controls and risk assessment. Climate Change (December 21, 2010).

Like the national plans of other countries, the domestic one contains information about the potential risks and positive effects of climate change in Russia. In particular, the Plan includes the following negative consequences: increased risk to public health; increased frequency, intensity and duration of droughts in some regions, extreme precipitation, floods and soil waterlogging dangerous for agriculture; increased fire danger in forest areas; degradation of permafrost in the northern regions with damage to buildings and communications; disruption of ecological balance, including the displacement of some biological species by others; spread of infectious and parasitic diseases; increased energy consumption for air conditioning in the warm season.

Regarding the first point, it is important to note that sociological studies show that in a number of Arctic regions and cities, there is a high level of stress among the population, as well as "uncertainty about the future". Therefore, adaptation issues need to be raised not only at the federal, but also at the regional levels [10, da Cunha C. et al.]. A number of scientists also refer to the problems of adaptation in the North of Russia as: lack of access to markets and infrastructure, lack of incentives for the development of products with high added value; unregulated fishing in fragile freshwater ecosystems [11, Konnov A. et al.].

Besides, scientists emphasize the increased nickel concentrations near mining / smelting enterprises in the Arctic among the serious problems. There are no scenarios of nickel exposure in coastal, estuarine and marine waters. The bioavailability of nickel in fresh water depends on spatial trends in dissolved organic carbon content [12, Gauthier P.T.].

The projected positive effects of climate change include: reduction of energy consumption during the heating season; improving ice conditions and, accordingly, conditions for transporting goods in the Arctic seas, facilitating access to the continental shelf of the Russian Federation in the Arctic Ocean; improving the structure and expanding the crop production

area, as well as increasing the efficiency of livestock farming (subject to a number of additional conditions being met and certain measures being taken); increasing the productivity of boreal forests.

The main objectives of the Adaptation plan include the following:

- scientific support for making management decisions;
- implementation of solutions in the field of adaptation;
- implementation of optimal economic decisions in the field of climate-sensitive sectors of the economy;
- updating strategies for the development of economic activities taking into account the climate agenda;
- reducing the risks of foreign economic activity by protecting and encouraging domestic producers;
- ensuring Russia's compliance with international obligations under existing climate change agreements.

According to Ilya Torosov, Deputy Minister of economic development of the Russian Federation, "[...] As of June 2022, regional climate change adaptation plans have been approved in the Republic of Crimea, Belgorod, Volgograd, Vologda, Kemerovo, Kursk and Penza oblasts" [20]. Thus, among the Arctic subjects, taking into account November 2022, when the regional adaptation plan for the Arkhangelsk Oblast [21] was adopted, regional plans were approved for two regions. As an example of the basic directions of work of the regional government in the field of climate adaptation, we can cite the words of Igor Muraev, Minister of Natural Resources And Timber Industry of the Arkhangelsk Oblast, who noted the following: "Currently, the regional plan includes more than twenty relevant activities for the region, aimed, in particular, at stabilizing the forest fire situation, protecting settlements and agricultural lands from waterlogging, increasing the effectiveness of measures to prevent and eliminate emergency situations. The climate change adaptation plan assumes a systematic approach to the implementation of all programs." Among the specific practical steps of the regional plan, the development in 2023 of the state program of the Arkhangelsk Oblast "Improving the rivers of the White Sea basin" should be noted, as well as the implementation of measures to eliminate unauthorized dumps of various types of waste.

In March 2023, the above-mentioned federal action plan for the second stage of adaptation to climate change for the period up to 2025 was adopted. The plan contains 17 measures, which include the following: improving insurance mechanisms in the context of adaptation to climate change; development of national standards for the national standardization system in the

[20] V Rossii zavershena razrabotka otraslevykh planov adaptatsii k izmeneniyam klimata. Departament Rosgidrometa po Privolzhskomu federal'nomu okrugu [In Russia, the development of sectoral plans for adaptation to climate change has been completed. Department of Roshydromet for the Volga Federal District]. URL: http://www.pfo.meteorf.ru/news/2022/v-rossii-zavershena-razrabotka-otraslevyix-planov-adaptaczii-k-izmeneniyam-klimata.html (accessed 29 March 2023).

[21] V Arkhangel'skoy oblasti utverzhden regional'nyy plan adaptatsii k izmeneniyam klimata [A regional climate change adaptation plan has been approved in the Arkhangelsk Oblast]. URL: https://arh.mk.ru/social/2022/11/24/v-arkhangelskoy-oblasti-utverzhden-regionalnyy-plan-adaptacii-k-izmeneniyam-klimata.html (accessed 29 March 2023).

field of climate adaptation; development of adaptation programs at various levels of the education system; identification of the best foreign practices, including within the framework of the corporate governance system; promoting Russian approaches to adaptation at the international level; use of space satellite data; inclusion of adaptation issues in strategic planning documents; updating regional adaptation plans.

## *References*

1. Magnan A.K., Oppenheimer M., Garschagen M., Buchanan M.K., Duvat V., Forbes D.L., Ford J.D., Lambert E., Petzold J., Renaud F.G., Sebersvari Z., Van de Wal R.S.W., Hinkel J., Portner H.-O. Sea Level Rise Risks and Societal Adaptation Benefits in Low-lying Coastal Areas. *Scientific Reports*, 2022, vol. 12, iss. 1, 10677. DOI: 10.1038/s41598-022-14303-w
2. Salaudeen A., Shahid S., Ismail A., Adeogun B.K., Ajibike M.A., Bello A.D., Salau O.B.E. Adaptation Measures under the Impacts of Climate and Land-use/Land-cover Changes Using HSPF Model Simulation: Application to Gongola River Basin, Nigeria. *Science of the Total Environment*, 2023, vol. 858. 159874. DOI: 10.1016/j.scitotenv.2022.159874
3. Rosqvist G.C., Inga N., Eriksson P. Impacts of Climate Warming on Reindeer Herding Require New Land-use Strategies. *Ambio. A Journal of the Human Environment*, 2022, vol. 51, iss. 5, pp. 1247–1262. DOI: 10.1007/s13280-021-01655-2
4. Pekkarinen A.-J., Rasmus S., Kumpula J., Tahvonen O. Winter Condition Variability Decreases the Economic Sustainability of Reindeer Husbandry. *Ecological Applications*, 2022, vol. 33, iss. 1, e2719. DOI: 10.1002/eap.2719
5. Skarin A., Jouko K., Tveraa T., Åhman B. Reindeer Behavioural Ecology and Use of Pastures in Pastoral Livelihoods. In: *Reindeer Husbandry and Global Environmental Change: Pastoralism in Fennoscandia*, 2022, pp. 63–751. DOI: 10.4324/9781003118565-6
6. Melnikov V.P., Osipov V.I., Broushkov A.V., Badina S.V., Drozdov D.S., Dubrovin V.A., Zheleznyak M.N., Sadurtdinov M.R., Sergeev D.O., Okunev S.N., Ostarkov N.A., Osokin A.B., Fedorov R.Yu. Adaptatsiya infrastruktury Arktiki i Subarktiki k izmeneniyam temperatury merzlykh gruntov [Adaptation of Arctic and Subarctic Infrastructure to Changes in the Temperature of Frozen Soils]. *Kriosfera Zemli* [Earth's Cryosphere], 2021, vol. 25, no. 6, pp. 3–15. DOI: 10.15372/KZ20210601
7. Meyer A. Physical and Feasible: Climate Change Adaptation in Longyearbyen, Svalbard. *Polar Record*, 2022, vol. 58. DOI: 10.1017/S0032247422000079
8. Yulandari E.D., Murayama T., Nishikizawa S. Climate Change Adaptation through Policy Integration by Local Governments in Indonesia. *Mitigation and Adaptation Strategies for Global Change*, 2022, vol. 28, iss. 1, 3. DOI: 10.1007/s11027-022-10039-0
9. Moe A., Lamazhapov E., Anisimov O. Russia's Expanding Adaptation Agenda and its Limitations. *Climate Policy*, 2022, vol. 23, iss. 5, pp. 1–15. DOI: 10.1080/14693062.2022.2107981
10. Da Cunha C., Nikulkina I., Vanderlinden J.-P., Shadrin V., Doloisio N., Salakhova D. Adaptive Capacity for Climate Change: Local Initiatives and Federal Planning. The Case of Tiksi, Sakha Republic, Russia. *Polar Science*, 2021, vol. 31. 100761. DOI: 10.1016/j.polar.2021.100761
11. Konnov A., Khmelnitskaya Y., Dugina M., Borzenko T., Tysiachniouk M.S. Traditional Livelihood, Unstable Environment: Adaptation of Traditional Fishing and Reindeer Herding to Environmental Change in the Russian Arctic. *Sustainability*, 2022, vol. 14, iss. 19. 126440. DOI: 10.3390/su141912640
12. Gauthier P.T., Blewett T.A., Garman E.R., Schlekat C.E., Middleton E.T., Suominen E., Crémazy A. Environmental Risk of Nickel in Aquatic Arctic Ecosystems. *The Science of the Total Environment*, 2021, vol. 797 (15). 148921. DOI: 10.1016/j.scitotenv.2021.148921

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