Legal protection of climate in Turkmenistan

Yolbars Kepbanov

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Legal protection of climate in Turkmenistan:

Assessment of the current situation and development prospects

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Abbreviations

ADB	Asian Development Bank
AF	Adaptation Fund
AST	Academy of Sciences of Turkmenistan
BR	Biennial Report
CDM	Clean Development Mechanism
CECC	Council of Experts on Climate Change
COP	Conference of the Parties
DRM	disaster risk management
DRR	disaster risk reduction
EBRD	European Bank for Reconstruction and Development
EES	environmental emergency situation
EIA	environmental impact assessment
ERF	extended reporting framework
EU	European Union
FEC	fuel and energy complex
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Fund
GGI	greenhouse gas inventory
GHG	greenhouse gas
GIZ	German Society for International Cooperation
HFC	hydrofluorocarbons
ICA	International consultation and analysis
IFSAS	International Fund for Saving the Aral Sea
IPCC	Intergovernmental Panel on Climate Change
MAT	Ministry of Agriculture of Turkmenistan
MEPT	Ministry of Environmental Protection of Turkmenistan
MEnT	Ministry of Energy of Turkmenistan
MEdT	Ministry of Education of Turkmenistan

MF&ET	Ministry of Finance and Economy of Turkmenistan
MH&MIT	Ministry of Health and Medical Industry of Turkmenistan
MRV	Measurement, Reporting and Verification System
NAP	national adaptation plan
NC	National Communications on Climate Change
NCAPT	National Caspian Action Plan of Turkmenistan
NCS	The Nature Conservation Society
NDC	nationally determined contribution
NGO	non-governmental organization
NMP	national mitigation plan
ODS	ozone depleting substance
OSCE	Organization for Security and Co-operation in Europe
PRC	People's Republic of China
PT	Pollutants
REPSDCA	Regional Environmental Program for Sustainable Development of Central Asian Countries
RES	renewable energy sources
SCWRT	State Committee for Water Resources of Turkmenistan
SDG	Sustainable Development Goals
SPNT	specially protected natural territories
TNSCC	Turkmenistan's National Strategy on Climate Change
UIET	Union of Industrialists and Entrepreneurs of Turkmenistan
UNCCD	UN Convention to Combat Desertification
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	UN Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNICEF	United Nations Children's Fund
USA	United States of America
USAID	United States Agency for International Development
WHO	World Health Organization
WMO	World Meteorological Organization

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Yolbars Kepbanov

1 Introduction

In the current moment, the problem of global climate change occupies a central place in the international political agenda. Climate change is one of the serious challenges and threats to humanity, which has prompted states to respond adequately to these negative phenomena. According to the United Nations General Assembly (UNGA) Resolution 70/1 of 25 September 2015, "Transforming our world: the 2030 Agenda for Sustainable Development", taking urgent action to combat climate change and its impacts (Goal 13) is identified as one of the most important Sustainable Development Goals (SDG).[1] The GA Resolution also recognizes the global nature of climate change and stresses the need for "the widest possible international cooperation to accelerate the reduction of global greenhouse gas emissions and to address adaptation to the adverse effects of climate change".[2]

The legal regulations related to climate change at the international level became apparent with the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. This is recognized as the main international instrument for coordinating a global response to climate change. The adoption of the UNFCCC also signaled international recognition of the problem of climate change and committed states to act together to achieve the stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic impacts on the climate system.[3] Due to the framework nature of the UNFCCC, the 1997 Kyoto Protocol was developed and adopted to implement its provisions, and subsequently replaced by the 2015 Paris Climate Agreement. The Paris Agreement enshrines a new model of low-carbon development based on a gradual phase-out of traditional technologies for the extraction, processing and use of fossil resources in favor of green technologies. The strengthening of the climate agenda is linked to the most ambitious goal for the global economy of reducing carbon emissions to almost zero by 2050. Achieving the

[1] UNGA Resolution of 25 September 2015. Transforming our World: The 2030 Agenda for Sustainable Development. https://sdgs.un.org/ru/2030agenda

[2] Ibid.

[3] UN Framework Convention on Climate Change. https: www. un.org/en/documents/decl_conv/conventions/ climate_framework_conv.shtml

goals of the UNFCCC and the Paris Agreement to curb global warming and the resulting requirements for "zero emissions" places great obligations on the countries of the global community to develop long-term strategies for low-carbon development.

On the basis of these international legal instruments, a legal regime for counteracting climate change is being developed and the process of creating a legal framework in the national states is underway. At present, they have accumulated rich experience in legal climate protection, reflecting the specifics of the ongoing processes in each country, taking into account their peculiarities.

In recent years, the role of law in combating the adverse effects of climate change has increased significantly. This was specifically noted in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). Specifically, the Report states that, since the previous report, there has been a steady expansion of policies and laws aimed at mitigating climate change, resulting in avoided emissions. Climate governance through laws, policies and institutions ensures mitigation and adaptation to climate change by providing overall direction, setting targets, integrating mitigation actions into all policy areas, enhancing regulatory certainty, creating specialized organizations and enabling the mobilization of finance.[4]

As a country located in the arid zone, Turkmenistan is particularly vulnerable to the adverse effects of climate change due to the steady increase in temperature and growing water deficit. Over the last 55 years, intensive warming has been observed throughout the country, which, due to its climatic peculiarities, is occurring at a faster rate than on the planet as a whole. During this period, the increase in average atmospheric air temperature was 1.4°C, while globally temperatures have risen by an average of 0.8°C over the past 100 years. According to studies, further climate warming is expected in Central Asia as a whole, and in Turkmenistan in particular: an increase in air temperature and a decrease in precipitation, as well as an increase in the number and severity of natural hydrometeorological events.[5]

Given the current situation, Turkmenistan is taking important steps to address climate change. The country is a party to the UNFCCC and the Paris Climate Agreement. Climate change is considered by the Government of the country as a possible and serious obstacle to the implementation of plans for sustainable economic development and improvement of the welfare of the country's population. Global climate change processes have a strong impact on economic sectors such as

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[4] The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report. https://www.ipcc.ch/report/ar6/wg2/

[5] Turkmenistan. Nationally Determined Contribution under the Paris Agreement. Ashgabat, 2022. https://unfccc.int/sites/default/files/NDC/2023-01/NDC_Turkmenistan_12-05-2022_approv.%20by%20Decree_Rus.pdf

health, agriculture, water management, land resources, flora and fauna and forestry, as well as lead to the occurrence of hazardous natural disasters. Climate change processes also impact other sectors, such as heavy industry, oil and gas, energy, transport, housing and utilities and waste. Through the main vulnerability factors, climate change impacts will negatively affect not only the economy but also human livelihoods in Turkmenistan.

In the context of implementing its international commitments, Turkmenistan has adopted an updated National Strategy on Climate Change (2019), which represents the national doctrine of the country's transition to low-carbon development, makes the necessary efforts to limit GHG emissions, and seeks to strengthen its capacity for adaptation and resilience to climate change. Mitigation and adaptation measures are laid down in national strategies and programs and enshrined in national legislation.

The Government of Turkmenistan, with the support of the Adaptation Fund (AF), the Global Environment Fund (GEF), the Green Climate Fund (GCF), the United Nations Development Program (UNDP), the European Union (EU), the United States Agency for International Development (USAID), the German Society for International Cooperation (GIZ), the European Bank for Reconstruction and Development (EBRD), the Asian Development Bank (ADB) and others, is implementing a range of projects aimed at developing adaptation measures, establishing a national mechanism for coordination and adaptation planning and strengthening the legal and information base in the main sectors of the country's economy that are exposed to climate change for effective decision-making.

In Turkmenistan, among the planned measures related to climate change, an important place is given to legislation, which currently must reflect the specifics of ongoing processes aimed at neutralizing and curbing negative climatic processes and the country's transition to a "green" path of development. With this in mind, Turkmenistan's National Strategy on Climate Change (NSTCC),[6] provides for measures to strengthen the legal framework in the area of climate change.

The problem of climate change in domestic legal science affecting certain aspects of the implementation of the provisions of the UNFCCC, the Paris Agreement and other international climate treaties has not yet been studied. The relevance of this issue is evidenced by a number of serious scientific studies, as well as the publication of a large number of articles and studies expressing a variety of approaches to understanding the subject of climate law. In this regard, it seems important to study

[6] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan dated 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/ migration/tm/undp-tm-NCCS_RUS.pdf

such issues in the context of the implementation of the provisions of these international legal instruments in national legislation.

The present work was initiated within the EU-funded project "Central Asian Law: Legal Culture and Business Environment in Central Asia" (project number 870647 H2020 MSCA-RISE 2019-2023), coordinated by Lund University (Sweden). This study is intended to assist stakeholders, especially governmental structures and institutions that play a leading role in addressing environmental policy issues, those undertaking efforts to develop policy and climate legislation, government officials involved in the process and scholars and students of climate change policy and legislation. This study is based on the opinion of scholars who have provided valuable advice and guidance on this topic. In this regard, I would like to express my special gratitude for the assistance provided by Dr. Hana Müllerová, Head of the Center for Climate Law at the Institute of State and Law of the Czech Academy of Sciences. I would also like to acknowledge and thank Dr. Rustamjon Urinboyev (Lund University, Sweden), Dr. Slavomir Horak (Charles University, Czech Republic) and Dr. Berdymyrat Ovezmyradov (Tebigy Kuwwat, Turkmenistan) for their support in preparing this publication.

2 Methodology

The present study analyses the current policy and legislation of Turkmenistan pertaining to climate change as a way of learning about the problem under study. It reviews scientific literature in the field of environmental protection and climate legislation and analyzes international legal documents, national environmental and other legislation on climate change and the institutional mechanisms designed to address issues related to climate change. The work identifies the legal problems related to the implementation of international legal norms in national legislation. As climate change creates a new situation, it is necessary to assess the existing policy and strategic documents, the legal framework and the institutional mechanism in order to identify the main directions for the development of climate change legislation.

A special place in the work is given to the positive experiences of a number of countries in Europe, including the EU, North America, Asia, and the post-Soviet states, in the formation and development of climate legislation. The selection was mainly made on the basis of the countries that have achieved notable success in creating an effective system of legislation and policies to meet the requirements of the international legal climate regime.

Based on the analysis of these documents and the existing opinions in the scholarly literature, the main approaches to the development of climate legislation in Turkmenistan are elaborated. An attempt is made to establish a legal framework for the implementation of measures to mitigate anthropogenic impacts on the climate (mitigation), adapt to the adverse effects of climate change, disaster risk managment (DRM), and improve the capacity of the institutional mechanisms through legal instruments. Possible legal frameworks that could be applied in the preparation of a framework Climate Change Act are separately outlined. Finally, Annexes 1 and 2 provide a list of Turkmenistan's laws and existing national strategies and programs, respectively, that address climate change issues and measures. Annex 3 contains the climate protection laws of foreign countries available as of 2022.

3 The international legal regime on climate change

Currently, there are sufficient regulatory documents at the international level to enable the creation of national legislation on climate change and mitigate the negative consequences of its occurrence. The process of forming the legal regime governing climate change has its own history that dates back to the second half of the 20th century. This process, in chronological sequence, is described in many studies,[7] which gives reason not to dwell on this issue in detail.

To date, a large number of international legal documents intended to combat climate change have been developed and adopted. These include the 1979 Convention on Long-Range Transboundary Air Pollution, the 1985 Vienna Convention for the Protection of the Ozone Layer, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, the 1992 UNFCCC on Climate Change, the 1997 UNFCCC Kyoto Protocol, the 2015 UNFCCC Paris Agreement and others. In terms of the implementation of the provisions of these international documents in the national legislation, of particular interest are the UNFCCC and the Paris Climate Agreement. General information on the legal regime of these international documents is available on the official website of the UN in the section "Climate Change";[8] detailed explanations and comments on their content are analyzed in the literature on international law and environmental law.[9] Special

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[7] S. Weart. The discovery of Global Warming. London: Harvard University Press, 2008; Climate Change Regulation: Global Practice and Prospects. ANO Centre for International and Comparative Legal Studies. M. 2021.

[8] UN website. https://unfccc.int/ru/peregovornyy-process-i-vstrechi/chto-takoe-ramochnaya-konvenciya-organizacii-obedinennykh-naciy-ob-izmenenii-klimata

[9] Международное экологическое право: Учебник /отв. ред. Р.М. Валеев. – М.: Статут, 2013; Дубовик О.Л. Международно-правовое регулирование охраны климата: история, актуальные задачи и тенденции реализации Модернизация законодательства Европейского Союза об охране климата и энергосбережении: Сборник научных трудов /Отв. ред. О.Л. Дубовик Е.В. Алферова /О.Л. Дубовик. – М.: ИГП РАН – ИНИОН РАН, 2014. С. 43 – 59; Дубовик, О.Л. Экологическое право: Учебник. – 2-е изд. /О.Л. Дубовик, Л. Кремер, Г. Люббе-Вольфф. – М.: Эксмо, 2008.

attention should be paid to the Commentary to the Paris Agreement, published in 2021.[10]

3.1 UN Framework Convention on Climate Change

The United Nations established an international legal regime to address climate change based on the UNFCCC, the decisions of the Conference of the Parties (COP) and the adopted protocols. The first large-scale international instrument the Convention was adopted on 9 May 1992 and opened for signature during the UN Conference on Environment and Development held in Rio de Janeiro on 4–14 June 1992. It entered into force on 21 March 1994; currently, 196 countries and the EU are parties to the Convention.[11]

The UNFCCC was the first international agreement to address global climate change and its impacts. In terms of its scope, it is an almost universal international legal instrument whose ultimate goal is to stabilize GHG concentrations in the atmosphere "at a level that would prevent dangerous anthropogenic interference with the climate system". The instrument states that "Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable further economic development on a sustainable basis."[12]

The framework nature of the Convention is a fairly common form of international treaties. This approach means that first a framework convention is adopted, which contains the general obligations of the parties, and then protocols are adopted that specify these obligations. Using the framework approach allows for an "incremental" process of lawmaking, starting with a general system of guiding principles for a particular problem, followed by the elaboration of specific obligations and the definition of organizational arrangements in protocols. This approach has been used successfully in the environmental field to address issues such as acid rain and ozone layer reduction. States are willing to join framework conventions because it does not

[10] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST: UKAZ&lang=en&adaptor=Local%20Search%20Engine

[11] UN Framework Convention on Climate Change. https://www.un.org/en/documents/decl_conv/conventions/climate_framework_conv.shtml.

[12] What is the United Nations Framework Convention on Climate Change? https://unfccc.int/ru/peregovornyy-process-i-vstrechi/chto-takoe-ramochnaya-konvenciya-organizacii-obedinennykh-naciy-ob-izmenenii-klimata

involve significant commitments on their part. Once launched, however, such a mechanism often takes on a dynamic of its own, providing a forum for discussion and acting as a reference center for common ground to help build trust between participants.[13]

Despite being a framework, the UNFCCC appears to be quite a progressive instrument. Like the 1985 Vienna Convention for the Protection of the Ozone Layer, it is largely based on a precautionary approach. In 1992, the scientific evidence on climate change was much less certain than it is today, but the Convention calls for action to keep people safe where risks are high, even in the face of scientific uncertainty. Its main objective, however, is not to reverse the greenhouse effect, but, as Article 2 provides, to achieve a "stabilization of greenhouse gas concentrations". The Convention itself, however, does not set a specific timeframe for action.[14]

The FCCC defines only general principles, the obligations of the parties to the Convention and the main directions of the activities to address climate change:

- The FCCC stipulates the need for an accounting of GHG emissions and removal by parties to the Convention. Data on registered annual GHG emissions and removal should be regularly provided to the FCCC Secretariat in the form of annual reports on their inventory or inventories.
- Parties are obliged to formulate, implement, publish and regularly update national programs to mitigate climate change by reducing anthropogenic impacts and GHG removal, and to implement measures to promote adequate adaptation to climate change.
- Parties are required to provide, on a periodic basis, a general description of the measures taken or envisaged to implement the Convention.

Given that industrialized countries have accounted for the majority of GHG emissions and still do, the bulk of the efforts to reduce GHG emissions fall on these countries. Under this principle, the UNFCCC provides different obligations for particular groups of states. The Convention provides for the application of the most important principle of common but differentiated responsibilities, taking into account the different socio-economic conditions of countries. Moreover, it is recognized that industrialized countries bear the main responsibility for anthropogenic climate change: the preamble of the Convention states that

[13] Короткий Т.Р. Понятие и признаки рамочных конвенций. file:///C:/Users/Asus/Desktop/ponyatie-i-priznaki-ramochnyh-konventsiy.pdf

[14] Kevin R. Gray et al. (eds.). The Oxford handbook of international climate change law. 2016, pp. 688-699. https://e.mail.ru/newsletters/0:16669759280112312148:500013/#:~:text=Book,2016

"developed countries account for the largest share of past and present global greenhouse gas emissions"; therefore, based on the principle of common but differentiated responsibilities, they "should take the lead in combating climate change and its adverse effects" (Art. 3, par. 1).[15]

In this regard, the FCCC imposes additional obligations on industrialized countries and economies in transition:

- Each of these parties to the Convention should pursue national policies and take appropriate measures to mitigate climate change by limiting its anthropogenic GHG emissions and protecting and enhancing the quality of its GHG, thus demonstrating leadership in this area to the rest of the countries.
- Parties should provide, on a periodic basis, detailed information on their policies and measures, as well as on their projected anthropogenic GHG emissions by sources and removals by sinks.
- Parties included in Annex II to the FCCC (developed countries) are obliged to provide financial and other assistance to developing countries to fulfill their obligations under the Convention, taking into account their specific needs and the characteristics of their socio-economic development.

The differentiated obligations of the parties are reflected in a number of other articles of the Convention. Thus, under Article 12, each developed country party and each other Annex 1 party shall submit its initial communication within six months of the entry into force of the Convention for that party. Each party not included in such a list shall submit its initial communication within three years after the entry into force of the Convention for that party. Parties that are least developed countries may submit their initial communication at their discretion.

The precautionary principle, or precautionary approach, has an important place in the Convention: "Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects" (Part 3, Art. 3). The Convention recognizes the vulnerability of all states to climate change and calls for climate change adaptation measures, that is, the adaptability of natural or human-made systems in response to actual or expected climate change. In the early years after the Convention entered into force, less attention was paid to climate change adaptation than to climate change mitigation. Following the release of the IPCC Third Assessment Report, the focus on adaptation has increased and

[15] Ibid.

Parties have agreed to initiate a process to address climate change and to establish modalities for financing adaptation.

Work on adaptation is currently taking place within various bodies under the Convention. One important example of a comprehensive approach to adaptation under the Convention, in the context of the Cancun Adaptation Framework, was the agreement to establish an Adaptation Committee16 as an integral part of the Cancun Agreements.17 The FCCC also establishes the principle of sustainable development: "Parties have the right to sustainable development and should promote it. Policies and measures to protect the climate system from anthropogenic changes should be tailored to the specific circumstances of each party and integrated with national development programs, as economic development is key to responding to climate change". Combating climate change was one of the 17 Sustainable Development Goals adopted in September 2015 at the 70th session of the UNGA.

In order to fulfill the obligations under the Convention, a key innovation of the UNFCCC is the establishment of funding mechanisms to assist developing countries. According to Article 4 (7) "The extent to which developing country Parties effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and technology transfer, taking full account of the fact that economic and social development and poverty eradication are the principal and overriding priorities of developing country Parties". That is, the fulfilment of developing countries' obligations under the Convention will depend on assistance from developed countries. According to one commentator, "The idea that developing countries do not need to fulfill their obligations unless they are provided with financial and technical assistance is really radical."[18]

Finally, the UNFCCC provides for dispute settlement in Article 14, but it is not very complex and is not mandatory. Parties may, upon becoming a party, choose to settle disputes through the International Court of Justice or arbitration in accordance with procedures to be agreed by the COP "as soon as practicable" in an annex on arbitration. The COP is also mandated to agree on a conciliation annex.[19]

The highest body of the UNFCCC is the COP. Members of the COP are representatives of all the countries that are parties to the UNFCCC. The COP

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[16] Adaptation Committee. https://unfccc.int/Adaptation-Committee

[17] Cancun Agreements. https://unfccc.int/process/conferences/pastconferences/cancun-climate-change-conference-november-2010/statements-and-resources/Agreements

[18] Kevin R. Gray et al. (eds). The Oxford handbook of international climate change law. 2016, pp. 97-119. https://e.mail.ru/newsletters/0:16669759280112312148:500013/#:~:text=Book,2016

[19] Ibid.

monitors the implementation of the Convention and has decision-making competence. The COP meets annually to review the implementation by the Parties of the provisions enshrined in the Convention in terms of achieving its ultimate objective, as well as to review the latest scientific findings on climate change and the best practices for the development and implementation of policies and measures aimed at mitigating and adapting to it. Based on this review, the COP takes appropriate decisions to improve the provisions of the Convention to incentivize parties to implement their commitments and to negotiate new commitments. A Permanent Secretariat and two subsidiary bodies have also been established: the Subsidiary Body for Scientific and Technological Advice, which shall, within its mandate, make the decisions necessary to "provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely information and advice on scientific and technological aspects relating to the Convention." (Art. 9 (1)) and the Subsidiary Body for Implementation, "which shall assist the Conference of the Parties in assessing and reviewing the effective implementation of the Convention." (Art. 10 (1)).

In general, the UNFCCC contains neither a commitment to achieve specific outcomes nor a strict timeframe. Instead, it provides an institutional framework for the climate legal regime, as well as a platform for further negotiations[20] and the development of additional instruments.[21]

Due to the framework nature of the Convention, from the outset, states were faced with the task of developing and adopting an additional protocol. The first climate change conference was held in Berlin in 1995. At the third conference in 1997 in Japan, the Kyoto Protocol of 1997 was adopted in addition to the Framework Convention, defining the conditions and mechanisms for reducing GHG emissions (entered into force in 2005). The Protocol has been ratified by 191 countries and the EU. [22]

The Kyoto Protocol introduced specific international obligations by setting limits on GHG emissions for developed countries and contained market mechanisms to achieve its objectives. The Kyoto Protocol commitment period was set for 2008-

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[20] Регулирование в области изменения климата: мировая практика и перспективы. М. АНО «Центр международных и сравнительно-правовых исследований», 2021. С. 20.

[21] E. Louka. International Environmental Law Fairness, Effectiveness, and World Order. 2006, p. 361. https://www.cambridge.org/core/books/international-environmental-law/50CC4CB016DFBAFBEC5FF551B65AA38E

[22] E. Louka. International Environmental Law Fairness, Effectiveness, and World Order. 2006, p. 361. https://www.cambridge.org/core/books/international-environmental-law/50CC4CB016DFBAFBEC5FF551B65AA38E

2012. A new commitment period, from 2012 to 2020, was set by the 2012 Doha Amendment, which did not enter into force until 31 December 2020, thus prompting the COP to seek alternative approaches to interest more states in new international legal instruments on climate change.[23] As a result, the Kyoto Protocol was replaced by the Paris Agreement in 2015, with legally binding provisions.

3.2 Paris Agreement to the UN Framework Convention on Climate Change

The Paris Climate Agreement was adopted by 196 Parties at the 21st session of the UNFCCC COP (UNFCCC COP21) in Paris on 12 December 2015. The Agreement entered into force on 4 November 2016.[24]

Given the special importance of this document for climate change mitigation, there are many different assessments of the role and content of the Paris Agreement in the literature on international law, international environmental law and elsewhere. In particular, the official website of the UN notes that the Paris Agreement is the first ever legally binding document uniting countries in an endeavor to achieve a common goal with regard to combating and adapting to climate change.[25] In the legal literature on the subject, the Paris Agreement is called a legally binding international treaty, a key international instrument in the field of climate change,[26] the core of the international legal regime to combat global warming,[27] and a significant turn in the policy and legal regulation of climate protection.[28]

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[23] Регулирование в области изменения климата: мировая практика и перспективы. М. АНО «Центр международных и сравнительно-правовых исследований», 2021. С. 20.

[24] Paris Climate Agreement. https://unfccc.int/resource/docs/2015/cop21/rus/l09r.pdf

[25] What is the Paris Agreement? https://unfccc.int/ru/informaciya-ob-onuv/chto-takoe-parizhskoe-soglashenie

[26] Регулирование в области изменения климата: мировая практика и перспективы. М. АНО «Центр международных и сравнительно-правовых исследований», 2021. С. 13, 31.

[27] Intergovernmental Panel on Climate Change. Assessment Report 5: Climate change 2014. Mitigation of Climate Change. Chapter 13. International Cooperation: Agreements & Instruments, p. 1005. https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc wg3 ar5 chapter13.pdf

[28] Дубовик О.Л., Аверина К.Н. Значение Парижского соглашения для охраны климата: крупномасштабные планы и проблемы с их реализацией Международное право и международные организации. 2018. No. 4. С. 20.

In the Commentary on the Paris Agreement, the document is considered in the context of the development of the international legal regime on climate change, which represents a welcome addition to the existing body of international law in this area and differs markedly from other international treaties related to climate change – the 1992 UNFCCC on climate change and the 1997 Kyoto Protocol – in several significant respects.[29] In the same vein, the Paris Agreement is defined as an instrument aimed at implementing the UNFCCC.[30]

At the same time, the content and significance of the Paris Agreement cannot be fully appreciated without reference to the draft decision (on the COP21) that was discussed at the conference. Many articles of the Agreement are only revealed in the light of this and other related documents. But even the provisions of the articles of the Agreement, clearly formulated, in many situations serve mainly only as a guideline for national legislatures.[31]

The Paris Agreement sets a universal temperature goal of keeping the increase in global average temperature below 2 °C, taking action to limit the increase to 1.5 °C, and improving the ability to adapt to the adverse impacts of climate change. To achieve this important goal, the countries participating in the Agreement aim to pass the peak of global GHG emissions as soon as possible to reach "zero emissions" by the middle of the 21st century. To this end, they have made a voluntary commitment to reduce GHG emissions by 2030 and 2050.

The Paris Agreement contains specific mechanisms for a global response and the achievement of objectives through the implementation of mitigation measures, adaptation, financing, technology development and transfer, transparency of actions, support and capacity building, as well as issues of loss and damage, a mechanism to facilitate implementation of the Agreement.

Article 4(1) of the Agreement recognizes the need to stop GHG emissions in the long term, namely in the second half of the century. In other words, mitigation measures are among the most important commitments of the parties. This objective is achieved through the preparation of Nationally Determined Contributions (NDC) by countries. In accordance with Article 4(2), each party shall prepare and

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[29] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021, p. 34. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

[30] Регулирование в области изменения климата: мировая практика и перспективы. М. АНО «Центр международных и сравнительно-правовых исследований», 2021. С. 32.

[31] Дубовик О.Л., Аверина К.Н. Значение Парижского соглашения для охраны климата: крупномасштабные планы и проблемы с их реализацией Международное право и международные организации. 2018. No. 4. С. 20.

submit to the UN Climate Secretariat its NDCs and take domestic mitigation measures in order to achieve the objectives of such contributions. In their NDCs, countries report on their planned measures to reduce GHG emissions. The NDCs also provide information on planned sustainable development actions to adapt to a changing climate. Each NDC document reflects the states' emission reduction targets, taking into account their specific circumstances and capabilities. The NDCs are submitted to the UNFCCC Secretariat every five years.[32]

The Paris Agreement has also made great strides in placing adaptation (including loss and damage) on the international legal and policy agenda. This has resulted in a comprehensive article establishing a global goal for adaptation, specifying its core principles and elements and ensuring that adaptation is firmly anchored in national frameworks, while at the same time setting out a framework for enhancing international cooperation and requiring developed and other states to provide the means for developed states to support them.[33]

Article 9(1) of the Paris Agreement provides for financial assistance to developing countries from developed countries for both mitigation and adaptation. Developed countries are mandated to continue to take the lead in mobilizing mitigation finance from a wide range of sources, instruments and channels, noting the significant role of public funds, through a variety of actions, including support for country-driven strategies, and taking into account the needs and priorities of developing country parties. This mobilization of climate finance should represent an advance beyond previous efforts.

Climate finance is necessary for climate change mitigation, as large-scale investments are needed to significantly reduce emissions. Climate finance is also important in the context of adaptation, as adapting to a changing climate requires significant financing.[34]

Technology support is also provided to developing countries. The Paris Agreement aims to fully realize development and transfer to strengthen cooperative action on technology development and transfer at different stages of the technology cycle, with a view to balancing support for mitigation and support for adaptation. The Agreement establishes a Technology Framework to provide overarching

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[32] Nationally Determined Contributions. https: unfccc.int/en/informaciya-ob-onuv/opredelyaemye-na-nacionalnom-urovne-vklady

[33] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. p. 111. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

[34] What is the Paris Agreement? https: unfccc.int/en/informaciya-ob-onuv/chto-takoe-parizhskoe-soglashenie

guidance to the Technology Mechanism. The development and transfer of technologies shall be channeled through the strategic and implementation units of the Mechanism.

The Paris Agreement gives an important role to climate change-related capacity building for developing countries and calls on developed countries to enhance support for relevant measures in this area. Capacity building should enhance the capabilities and capacities of developing countries to implement effective climate change actions, including adaptation and mitigation actions, as well as to facilitate the development, dissemination and deployment of technologies and access to climate change finance, promote relevant aspects of education, training and public awareness and facilitate transparent, timely and accurate reporting. These capacity-building measures are enshrined in the relevant articles of the Paris Agreement. Article 12, for example, calls upon parties to cooperate on measures to enhance education, training, public awareness, public participation and public access to information on climate change, as appropriate, recognizing the importance of these steps for enhanced action under this Agreement.

The Paris Agreement gives utmost importance to building mutual trust and confidence among parties and establishes an enhanced framework for transparency of action and support that is flexible, taking into account the different capacities of parties and building on collective experience (Article 13). This is reflected in the establishment of the Extended Reporting Framework (ERF). Under this Framework, from 2024 onwards, States will report on climate change measures taken and progress on mitigation, adaptation and support received or provided in a transparent manner.[35] The agreement also provides for procedures to review the reporting submitted with the participation of international experts. The information generated by the ERF will form the basis of the Global Results, a process to assess collective progress towards long-term climate goals. The outcome of this process will be recommendations for states to set more ambitious targets as they are further revised.[36] Transparency, in the form of reporting and review, has become an integral pillar of the international climate change regime. While reporting and review have been part of the UNFCCC since its inception, their implications have been contested.[37] Given the emphasis on national discretion in setting mitigation targets in the Paris Agreement, enhanced transparency plays a key role in the structure of the

[35] Ibid.

[36] Ibid.

[37] See e.g., Joseph E. Aldy, The Crucial Role of Policy Surveillance in International Climate Policy. Climatic Change 126, pp. 279–292 (2014); Gregory Briner and Sara Moarif, Enhancing Transparency of Climate Change Mitigation under the Paris Agreement: Lessons from Experience (OECD 2016).

Agreement. It is one of three links in the ambition mechanism that seeks to ensure that the goal and long-term objectives of the Agreement are met. Notably, while the reporting and review processes under the UNFCCC and the Kyoto Protocol were strictly divided and mainly focused on developed countries, the Paris Agreement is, in principle, applicable to all parties, while providing some flexibilities for developing countries.[38]

By making information on parties' GHG emissions and climate policies available to stakeholders (including other parties and non-state actors), transparency is expected to enhance confidence that parties are making efforts to implement and achieve their INDCs and provide the necessary financial, technological and capacity-building support. This, in turn, will increase the likelihood of responses from other parties. Moreover, transparency can show whether the level of collective efforts undertaken by countries is adequate to address climate change, shedding light on what countries are doing individually. Indeed, information reported under the transparency framework will be one of the sources used to assess countries' collective progress towards the Paris Agreement goal and long-term goals in the context of periodic global stocktaking under Article 14 (see Section D).[39] In addition, transparency can serve as an incentive for countries to increase the ambition of their NDC by generating international peer pressure, as well as providing domestic constituencies (e.g., parliamentarians and national auditors) and non-state actors (e.g., civil society, businesses and investors) with information on a country's performance.[40]

Thus, the current international legal regime on climate change is based primarily on the UNFCCC, COP decisions and the Paris Agreement. These are the main international documents on the basis of which all necessary measures to combat climate change are implemented. At the same time, there are other points of view regarding the content of these international agreements. In particular, it should be noted that the UNFCCC was the first international agreement aimed at combating global climate change and its impacts. It does not create specific legal obligations;[41]

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[38] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. p. 304. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

[39] Ibid.

[40] Harro van Asselt, The Role of Non-State Actors in Reviewing Ambition, Implementation, and Compliance under the Paris Agreement. Climate Law 6(1-2), pp. 91-108 (2016).

[41] D. Bodansky, J. Brunnée and L. Rajamani, International Climate Change Law. New York: Oxford University Press, 2017, p. 126; A. Kiss and D. Shelton, Guide to International Environmental Law. Leiden: Koninklijke Brill NV, 2007, pp. 172-173.

rather it only defines general principles and approaches to addressing climate change and "creates an institutional framework for a climate legal regime, a platform for further negotiations."[42]

The Paris Climate Agreement is a legally binding international treaty that builds on the UNFCCC and seeks to implement its provisions at the international and national levels. However, one of the main problems with the Paris Agreement is that some of its provisions are vague and undefined, with few clear obligations. This is because states have not been able to agree on clearer language. Unfortunately, the Agreement is a relatively weak instrument of international climate law.

However, one of the main problems with the Paris Agreement is that some of its provisions are vague and undefined, with few clear obligations. This is because states have not been able to agree on clearer language. Unfortunately, the Agreement is a relatively weak instrument of international climate law.[43]

Thus, although there are different points of view on international climate agreements, it is nevertheless safe to say that a certain international legal framework for combating climate change has now been established, uniting most of the world's states. The existence of such international instruments creates an important legal basis for the formation and development of national legislation on climate change.

3.3 The International Climate Regime and the Emergence of a New Branch of Law

In connection with climate change and the formation of international legal norms for the protection and preservation of the climate system, most researchers recognize the emergence of a new branch of law: **climate law or climate change law**.[44] Such a vast body in different branches of international law, on the one hand, complicates law enforcement, but on the other hand, indicates the formation of an international

[42] Регулирование в области изменения климата: мировая практика и перспективы. М. АНО «Центр международных и сравнительно-правовых исследований», 2021. С. 20.

[43] Bodansky, Daniel. The Legal Character of the Paris Agreement. Review of European, Comparative & International Environmental Law. 2016, Issue 2, pp . 142-150.

[44] Martin Winkler, *Klimaschutzrecht,* Munster: Lit Verlag, 2005; Klaus F. Garditz, Schwerpunktbereich – Einfuhrung in das Klimaschutzrecht. Juristische Schulung, 324-329 (2008); Michael, Kloepfer, Umweltschutzrecht. Munich: Beck, 2008; Benoit Mayer, The International Law on Climate Change (CUP 2018); Jacqueline Peel, Climate Change Law: The Emergence of a New legal Discipline.; Mohamed S.A. Helal, Conversation about Climate Change Law and the 'International Community' Climate law 8 (3-4), pp. 229-243 (2018), https://e.mail.ru/newsletters/0:16669768551111694443:500013/#:~:text=Article,p.229%2D243

legal regime to counteract climate change.[45] Climate law can be defined as the body of law designed to protect the climate from negative impacts and is an intersectoral branch of law.

At the very beginning of the process of formation of climate legislation, most legal scholars believed that climate change law was a sub-branch of international environmental law.[46] At the same time, in the EU, for example, a key part of climate legislation is GHG emissions trading, which was the basis for its formation, and has grown in many ways in the process of further development. Therefore, climate change law is now very broad in scope, touching on areas that are often not considered "environmental" in nature.[47] In this regard, most researchers recognize that climate change law is interdisciplinary, with many branches of law intersecting; therefore there is neither a clearly defined term nor a dedicated branch of law that encompasses all legal implications related to climate change. Incorporating climate change into any legal structure is challenging because of the endless ramifications and, in particular, the interdisciplinary nature of climate change and its impact on different segments. When climate change is considered from a legal perspective, there are many overlaps between legal institutions and branches.[48] In this regard, for example, Y.A. Tikhomirov substantiates the thesis about the formation of a new complex institution in the system of Russian legislation called "legal support of climate conservation".[49] Due to the pervasive impact of climate change, climate law overlaps with many other legal regimes. The climate issue involves a huge range of human activities, most of which are subject to their own, often disparate and complex legal regimes. Scientists are only beginning to map this evolving landscape.[50]

The Czech climate law specialist H. Müllerová also recognizes the formation of a new branch of climate law. She notes that the establishment of an international legal regime on climate change and the corresponding legal framework in national states

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[45] Солнцев А.М. 2018. Изменение климата: международно-правовое измерение. – Московский журнал международного права. No. 1. С.72

[46] See Gregor Shaffer and Tom Ginsburg, 'The Empirical Turn in International Legal Scholarship', 106(1) American Journal of International Law 1 (2012), pp. 38-41; Helal, Mohamed S. A. Conversation about Climate Change Law and the 'International Community' Climate law, 2018, Vol. 8 (3-4), pp. 229-243. https://e.mail.ru/newsletters/0:16669768551111694443:500013/#:~:text=Article,p.229%2D243

[47] Jacqueline Peel. Climate change law: the emergence of a new legal discipline.

[48] Oliver C. Ruppel Intersections of Law and Cooperative Global Climate Governance – Challenges in the Anthropocene. Climate Change: International Law and Global Governance. Volume I: Legal Responses and Global Responsibility. 2013. https://www.jstor.org/stable/j.ctv941w8s.8

[49] Тихомиров Ю.А. 2016. Сохранение климата – актуальная задача права. – Право и экономика. No. 6. С. 4-8.

[50] Transnational Climate Law. Transnational Climate Law 7:2 (2018), pp. 191-200.

provides an opportunity for legal studies to take a fresh look at this area of law, which naturally leads to the formation of a new branch: climate law. In recent years, this field has been developing very dynamically, and legal experts, groups or university departments specializing in climate law have already emerged. The development of a new branch of law is a continuous process in which theorists develop the elements of structure, concepts, principles and content to assist practitioners in finding the best form of climate action when drafting legislation or when applying the law in courts in climate cases.[51] At the same time, when talking about climate change legislation within the Czech legal system, Müllerova notes that within the last few years, climate change has posed qualitatively new challenges that can only be partially covered by environmental law. It does not seem to offer a complete set of suitable tools to address the complex challenges posed by climate change to society. At the theoretical level, climate law has not yet been considered as a separate branch of law in Czech legal studies. The relationship between environmental law and climate law has not been clarified, nor has the list of other areas into which climate law could potentially enter (e.g., energy law, transport law, financial law and planning law) been finalized. More importantly on a practical level, Czech policy and legislation should be systematically examined in terms of climate commitments.[52]

On the other hand, the thesis has been put forward that environmental law is being "crowded out" as it is increasingly dominated by climate law. The argument is that the latter tends to preclude numerous other environmental law issues, be it chemicals, water pollution, habitat destruction or the many additional examples that can be given.[53]

On the substantive side of climate law, a number of specialists emphasize that it goes beyond environmental law and regulates measures covering actions that fall within the scope of climate change mitigation, adaptation and DRM.[54] Climate change mitigation and adaptation measures cover many sectors and sectors of the economy, and in this context, climate law goes beyond environmental law to cover

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[51] H. Müllerová et al, Klimatické pravo, Prague: Wolters Kluwer, 2022.

[52] H. Müllerová, The Centre for Climate Law and Sustainability Studies Launched. https://www.ilaw.cas.cz/en/research-and-projects/class/our-comments.html

[53] World Bank, Crowding Out or Crowding Climate Change and the Broader Environmental Agenda and Climate Law. Journal Environmental Law. 25:3. 2013. http: siteresources.worldbank.org/ENVIRONMENT/Resources/ 244380-1250028593656/6382907-1252510780845/6428643-1256655379723/6510806-1258739266750/Rebalancing_the_environment_agenda_draft_CN.pdf4

[54] What is climate change legislation? https://www.lse.ac.uk/granthaminstitute/explainers/what-is-climate-change-legislation/#:~:text=Climate%20change%20legislation%2C%20often%20abbreviated,by%20setting%20its%20legal%20basis.

energy, including renewable energy, utilities, waste management, health, agriculture, land use, transport and other areas. Therefore, when talking about the content of climate legislation, it should not be limited only to legislation on environmental protection and nature management.[55]

This broad coverage of legal norms in climate law has permitted the assertion that international and national climate law has acquired clear structures over the period of its development. The structural regulatory strategies in climate change law can be broadly grouped into greenhouse gas emission reduction strategies (climate change law in the strict sense) and climate change adaptation strategies (climate change adaptation law).[56] There are also opposing views on this issue. In particular, a number of researchers maintain that the theory of environmental law has not developed a unified approach and methodology for the formation of new climate legislation. They consider climate problems through the prism of environmental law, without singling out "climate" lawmaking.[57] These critics do not consider this "special position" of climate legal regulation to be justified or necessary. It is a steady habit of legal scholars to give a separate status to each new phenomenon, especially if this phenomenon can be attributed at least partially to the category of "challenge", "threat" or "security", and to recognize it as a separate branch of legal regulation. "Autonomization" of legal regulation, expressed in the emergence of new and new "branches" of law, greatly complicates the effectiveness of legal regulation, and promotes too narrow of a "branch" or "subject" view of the nature of law as a universal tool for solving emerging problems.[58]

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[55] Кепбанов Ё., Кепбанов М. Развитие климатического законодательства Туркменистана. Актуальные вопросы перехода Туркменистана к «зеленым» технологиям. Материалы научно-практической конференции (Ашхабад, 23 ноября 2021 г.). Ашхабад. 2021. С. 230.

[56] Hans-Joachim Koch, Climate Change Law: Objectives, Instruments and Structures of a New Area of Law. Climate Change: International Law and Global Governance. Volume I: Legal Responses and Global Responsibility. 2013. https://www.jstor.org/stable/j.ctv941w8s.11

[57] Тихомиров Ю.А. Сохранение климата – актуальная задача права Право и экономика. 2016. No. 6. С.4-8; Дубовик О.Л. Современные эколого-правовые конфликты в области охраны климата и борьбы с глобальным потеплением Экологическое право. 2018. No. 5. С. 35-40; Дубовик О.Л., Аверина К.Н. Значение Парижского соглашения для охраны климата: крупномасштабные планы и проблемы с их реализацией Международное право и международные организации. 2018. No. 4. С. 18-27; Право и климат планеты: научное издание / кол. Авт.; отв. Ред. Ю.А. Тихомиров, С.А. Боголюбов, Н.В. Кичигин. М.: Юстиция, 2018. 180 с. и др.

[58] Жаворонкова Н.Г., Агафонов В.Б. Климатическое законодательство Российской Федерации: возможности и потенциал в условиях энергетического перехода Lex Russia. 2022. Т. 75. No. 1. С. 33.

Currently, climate law is taught as an independent academic discipline in many educational institutions. Special textbooks have been published on this discipline,[59] as have many thematic journals.[60] As experts emphasize, climate change poses unique challenges for legal education. As a subject, climate law is technically complex and normatively contested, evolving at a dynamic pace and crossing established boundaries between academic disciplines, branches of law and levels of jurisdiction. Nevertheless, it has by now become firmly embedded in the legal curriculum through general and specialized courses, and increasingly appears in courses on related branches of law.[61] In short, teaching climate change law requires both a generalist perspective to grasp its vast horizontal scale and multiple connections as well as a specialist's perspective to reflect its vertical layers and complex technical details.[62]

Thus, the problems associated with climate change are no longer a factor related only to environmental issues; instead, they increasingly determine the socio-economic development of most countries in the world. At present, climate change affects virtually all industries and sectors of the economy – and, accordingly, extends beyond the scope of environmental law. This situation clearly indicates the wide scope of legal norms pertaining to climate change, which acquire their outlines and the subject of legal regulation in the form of a new institute and branch of law: climate law.

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[59] Bodansky et al. (n 1); Daniel A Farber and Cinnamon P Carlarne, Climate Change Law (Foundation Press 2018); Richard G Hildreth and others, Climate Change Law: Mitigation and Adaptation (West Academic 2009); Leonardo Massai, European Climate and Clean Energy Law and Policy (Routledge 2011); John R Nolon and Patricia E Salkin, Climate Change and Sustainable Development Law in a Nutshell (West Academic 2010); Hari M Osofsky and Lesley K McAllister, Climate Change Law and Policy (Aspen Publishers 2012); Chris Wold, David Hunter and Melissa Powers, Climate Change and the Law (2nd ed., LexisNexis 2013); Edwin Woerdman, Martha M Roggenkamp and Marijn Holwerda (eds.), Essential EU Climate Law (Edward Elgar 2015); Benoit Mayer, The International Law on Climate Change (CUP 2018).

[60] See, for instance, Carbon & Climate Law Review http://www.lexxion.de/zeitschriften/fachzeitschriften-englisch/cclr.html4; Climate Law http://www.iospress.nl/journal/climate-law/ 4

[61] Michael Mehling, Harro van Asselt, Kati Kulovesi and Elisa Morgera, Teaching Climate Law: Trends Methods and Outlook Journal of Environmental Law, 2020, 32, 417-440.

[62] Zygmunt B Plater, Environmental Law and Three Economies: Navigating a Sprawling Area of Study, Practice and Societal Governance. 23 Harv Envtl L Rev 359 (1999); Joseph L Sax, Environmental Law in the Law Schools: What We Teach and How We Feel About It. 19 Envtl L Rev 10251 (1989).

4 The national climate change policy of Turkmenistan

Climate change and its consequences for the environment, economy and society have become one of the most urgent problems for the world community. Turkmenistan is one of the most vulnerable countries to climate change. Over the past 55 years, intensive warming has been observed throughout the country, which, due to its climatic peculiarities, is occurring at a faster rate than on the planet as a whole. During this period, the increase in average atmospheric air temperature has been 1.4°C, while globally temperatures have risen by an average of 0.8°C over the past 100 years. According to studies conducted in Central Asia in general, and in Turkmenistan in particular, further climate warming is expected: an increase in air temperature and a decrease in precipitation, as well as an increase in the number and strength of natural hydrometeorological phenomena.[63]

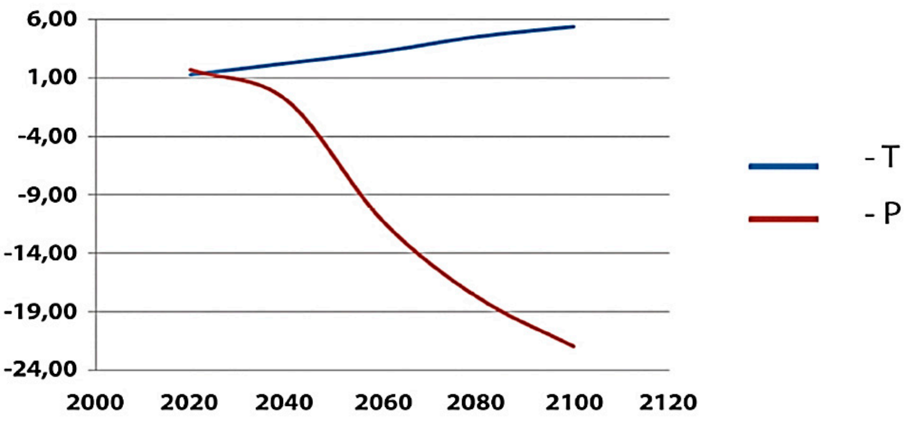

Figure 1: Deviations from the norm of mean annual air temperature T (degrees C) and precipitation P (mm) for Turkmenistan averaged under two scenarios.
Source: Turkmenistan's National Climate Change Strategy (2019)

[63] Turkmenistan. Nationally Determined Contribution under the Paris Agreement. Ashgabat, 2022. https://unfccc.int/sites/default/files/NDC/2023-01/NDC_Turkmenistan_12-05-2022_approv.%20by%20Decree_Rus.pdf

Over its years of independence, Turkmenistan has achieved considerable success in the area of socio-economic development. The country has established a national model of a market economy and ensured its dynamic growth. Turkmenistan's further development is based on an approach to the careful use of its rich natural resources and the introduction of modern equipment and the latest technologies.

Turkmenistan is an active supporter of the measures taken by the international community regarding climate change and pays great attention to the implementation of the international agreements reached within the UN’s framework on climate change. The country ratified the UNFCCC in June 1995,[64] the Kyoto Protocol to the UNFCCC in December 1998[65] and then the Paris Agreement to the UNFCCC in October 2016.[66]

As a party to international climate agreements, Turkmenistan is considered a developing country from the perspective of the international climate regime, meaning that it will be provided with the necessary financial resources to cover all the agreed costs, as well as a technology transfer from developed countries included in Annex II of the UNFCCC.

The active and consistent position of Turkmenistan is evidenced by the speeches of the president of the country and the heads of the delegations at the UNGA sessions and at other international forums on environmental protection and climate change. Following the 1998 signing of the Kyoto Protocol to the UNFCCC on climate change, the signing of the Paris Agreement in 2018 was reported as "a milestone event in the full-scale involvement in the mainstream processes of realization of environmental goals and objectives".[67]

In 2012, Turkmenistan adopted the **National Strategy on Climate Change**, which the head of state informed the international community about at the Rio+20 global summit on sustainable development in 2012. This provided for "prioritizing the development of high-tech industries, creating conditions for the development of ‘green economy’ as a basic element of the functioning of the entire infrastructure of

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[64] Decree of the President of Turkmenistan of 1 May 1995, No. 2198, "On Accession to the UN Framework Convention on Climate Change". Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1995. No. 5. Art. 2624.

[65] Decision of the Mejlis of Turkmenistan of 10 December 1998, No. 333-1, on ratification of the Kyoto Protocol to the UN Framework Convention on Climate Change. (Kyoto, 11 December 1997). Statements of Mejlis of Turkmenistan. 1998. No. 4. Art. 72 (rep. 12 December 2015).

[66] Decision of the Mejlis of Turkmenistan of 15 October 2016 on ratification of the Paris Agreement of the UNFCCC (Paris, 12 December 2015). Statements of Mejlis of Turkmenistan. 2016. No. 4. Art. 149.

[67] Gurbanguly Berdimuhamedov, To new heights of progress. Selected works. Volume 12. Ashgabat. Turkmen State Publishing Service, 2020.

life support of the country."[68] The 2012 National Strategy was the main climate policy document presenting the policy framework for building climate resilience and low-carbon development policy for the country. It included measures to improve energy efficiency in all major sectors of the economy, technical modernization and the introduction of renewable energy systems in remote and sparsely populated areas. It was aimed at increasing the share of renewable energy sources (RES) in the country's fuel and energy balance and developing economic incentives for their use. In 2019, an updated TNSCC was approved on the day of the Summit on Climate Change Action held in New York. It drew on the findings of the newly published Fifth IPCC Report from 2013-2014, which provided new evidence showing the worsening problem of climate change. The report identified an urgent need for international and national action to strengthen mitigation activities.[69] Following the publication of the results of the IPCC Fifth Report, the international community demanded stronger mitigation measures. At the UN Sustainable Development Summit in New York City on 27 September 2015, heads of state adopted a new 2030 Development Agenda with a list of SDGs to guide the global development agenda until 2030. Their adoption accelerated the international negotiation process for a new climate change agreement, which was adopted on 12 December 2015 at the end of the 21st Conference in Paris. Thus, the aggravation of the global climate change problem and the ambitious targets chosen by the Government of Turkmenistan to fulfill the SDGs, including Goal 13: "Adoption of urgent measures to combat climate change and its consequences", low-carbon development and the need for timely fulfilment of commitments under the Paris Agreement, as well as the past dramatic changes in the structure of executive power in the country and the rule on regular five-year updates, as previously stipulated in the National Strategy, triggered the need to revise the TNSCC. The objective of the updated TNSCC is to ensure the sustainable development of the country, including the economic, food, water and environmental dimensions to the impacts of climate change by creating a robust enabling environment, defining an effective and coherent climate change adaptation process for all priority sectors and developing effective mitigation measures that accelerate the low-carbon development of the country, as well as timely fulfilment of the international commitments made under the UNFCCC.[70]

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[68] Гурбангулы Бердымухамедов. Выступление на Конференции ООН по устойчивому развитию «РИО+20» (Рио-де-Жанейро, Бразилия, 21 июня 2012 г.). Нейтральный Туркменистан. 23 июня 2012 г.

[69] IPCC Fifth Assessment Report (AR5): Climate Change. https://www.ipcc.ch/languages-2/russian/publications-russian/

[70] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan dated 23 September 2019. Collection of Acts of the President of

One of the important initiatives of Turkmenistan is the proposal to establish a **Regional Center on Climate Change Technologies in Central Asia and the Caspian Basin**, in cooperation with the United Nations. Support for this initiative was voiced by the head of state and heads of delegations of Turkmenistan at the 66th, 67th, 68th and 70th sessions of the UNGA. Such a structure would allow the countries of the region to significantly strengthen interaction on environmental security issues and facilitate effective coordination of interregional efforts in this area. Having a UN mandate, the Center would monitor and carry out objective analysis of environmental processes and trends taking place in the region and, on their basis, would give appropriate recommendations to the governments of Central Asian states. The president of Turkmenistan also spoke about the initiative to establish such a regional center on the podium of the III UN World Conference on Disaster Risk Reduction (March 2015, Sendai, Japan). Describing the need to establish such a Center, the head of state noted: "The main goal of the Regional Center could be to stimulate technical and technological cooperation, develop and implement programs to support Central Asian countries in countering the negative impacts caused by global climate change." In the context of disaster risk reduction (DRR), "One of the priorities of the Center should be the development of a set of measures to prevent and reduce disaster risks in the region, which is highly vulnerable in this regard." Furthermore, "The establishment of such a structure is objectively conditioned by climatic conditions and the environmental situation in Central Asia, reflects the region's need for a direct and effective body for rapid response to the risks of natural disasters, and, in general, is consistent with the logic of international cooperation in these matters." In this regard, the president proposed to include the establishment of this center in the Framework for Disaster Risk Reduction after 2015.[71]

Turkmenistan fully supported UNGA Resolution 70/1 of 25 September 2015, "Transforming our World: The 2030 Agenda for Sustainable Development",[72] and has started taking steps to implement the SDGs at the national level. "While embarking on the implementation of national plans" in various sectors of the economy and social sphere, Turkmenistan responsibly strictly correlates them with

Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[71] Гурбангулы Бердымухамедов. К новым высотам прогресса. Избранные произведения. Том 9. – Ашхабад: Туркменская государственная издательская служба, 2016. С. 282-283.

[72] UNGA Resolution of 25 September 2015. Transforming our World: The 2030 Agenda for Sustainable Development. https://sdgs.un.org/ru/2030agenda

the environmental component of the SDGs".[73] In this regard, in addition to the SDGs, the Government pays special attention to Goal 13, "Adoption of urgent measures to combat climate change and its consequences" – measures which are consistently and organically integrated into national development programs and plans, providing for the transition to the use of modern environmentally friendly and resource-saving technologies in all sectors of the economy, the development of low-emission economy and, accordingly, climate change resilience.

The most important problem directly related to climate change is the **problem of the Aral Sea**. The Aral Sea is located in the northern desert of Central Asia within Uzbekistan and Kazakhstan. The Aral Sea basin includes two major river basins, the Amu Darya and the Syr Darya. These rivers are the main transboundary waterways and flow through the territory of six countries: Kyrgyzstan, Tajikistan, Uzbekistan, Kazakhstan, Turkmenistan and Afghanistan. The total average annual flow of all rivers in the Aral Sea basin is 115.6 km^3 (78.4 for the Amu Darya and 37.14 for the Syr Darya).

The main flow of the Amu Darya (length: 2,540 km, area: 309,000 km^2) is formed in Tajikistan (80%, with 12% in Afghanistan, 6% in Uzbekistan and 3.5% in Turkmenistan), while the main flow of the Syr Darya (length: 3,019 km, area: 219,000 km^2) is formed in Kyrgyzstan (74.2%, with 11.1% in Uzbekistan, 12.1% in Kazakhstan and 1.1% in Tajikistan). Thus, there is a significant inequality of runoff distribution by country and in the countries' share of the irrigated lands in the region. The sharp growth of irrigated lands in the region occurred in 1965-1990, when the centralized leadership of the USSR, without taking environmental requirements into account, decided to increase the production of cotton and other crops. This predetermined the future demise of the Aral Sea, as the total flow into the sea decreased from 55.0 km^3 in 1961 to 8-10 km^3 by 1990.

These data show the main reason for the Aral Sea's desiccation and the related ecological tragedy of the vast region. After 1961, there was a significant increase in water withdrawal for irrigation – up to 105.0 km^3. This led to a catastrophic decrease of water volume in the Aral Sea. Until 1961, the average area of the Aral Sea water mirror was 67.8 thousand km^2 and the water volume was 1,064.0 km^3. At present, the Aral Sea's water area is 13.0 thousand km^2, or 17% of its 1961 size, and the water volume is 90 km^3 or 9% of its previous volume.[74]

[73] Гурбангулы Бердымухамедов. К новым высотам прогресса. Избранные произведения 2020 г. Том 14. Ашхабад: Туркменская государственная издательская служба, 2022. С. 154.

[74] Ибатуллин Сагит. Проблемы Бассейна Аральского моря и значение регионального сотрудничества. https://unece.org/fileadmin/DAM/SPECA/documents/ecf/2010/AralSea.pdf

Turkmenistan considers the condition of Aral Sea to be a serious socio-ecological problem, which is further aggravated by climate change. In 2010, Turkmenistan proposed the creation of a special international expert group, which, in cooperation with the United Nations and its structures, could prepare a comprehensive international legal document on saving the Aral Sea. At the Rio+20 World Summit in 2012, the president of Turkmenistan proposed the development of a UN Special Program for the Aral Sea Basin,[75] and this proposal found wide support in the international community. This work was to be based on the Memorandum of Understanding signed on 3 March 2010 in Ashgabat between the UN and the Executive Committee of the International Fund for Saving the Aral Sea (IFAS).

Having assumed the chairmanship of the IFAS in 2016, Turkmenistan began to draw attention to the problem of the Aral Sea and Priaralie. At Turkmenistan's initiative, in April 2018 and May 2019, the UNGA resolutions "On cooperation between the UN and IFAS" were adopted, which "act as a platform for consolidation of joint efforts in the Aral Sea area".[76]

At the Summit of the Heads of the IFAS Founding States, held on 24 August 2018 in Turkmenbashi, important issues aimed at improving the environmental, water management and socio-economic situation in the Aral Sea basin were considered. In their speeches, the heads of the IFAS founding states noted that they consider IFAS to be a universal platform for interactions between the countries of the region to address a range of issues of regional importance, including through the implementation of regional projects and programs aimed at improving the environmental and socio-economic situation in the Aral Sea basin, and they expressed their readiness to further develop cooperation in this direction. In the Joint Communiqué adopted at the end of the Summit, the heads of state noted the importance of developing a Program of Action for Assistance to the Aral Sea Basin Countries 4 to unite the efforts and potential of the region's states and the international community in order to address the common priority of water management as well as the environmental and socio-economic issues in the Aral Sea Basin.[77] The Action programs to assist the countries of the Aral Sea basin Aral Sea is a long-term action program on the region’s sustainable development and takes the problem of climate change into account.

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[75] Гурбангулы Бердымухамедов. Выступление на Конференции ООН по устойчивому развитию «РИО+20» (Рио-де-Жанейро, Бразилия, 21 июня 2012 г.). Нейтральный Туркменистан. 23 июня 2012 г.

[76] Гурбангулы Бердымухамедов. Видеообращение к участникам 75-й сессии ГА ООН. https://mfa.gov.tm/ru/articles/465

[77] Summit of Founding Heads of States of the International Fund for Saving the Aral Sea. http://www.cawater-info.net/library/rus/ifas/summit-ifas-2018.pdf

The president of Turkmenistan noted that preservation of the Aral Sea "cannot be considered as an internal, regional problem for a long time" and for this purpose "the assistance of the world community, a new accentuated, comprehensive international approach, active and systematic participation of the UN in this work is required". To this end, Turkmenistan put forward an initiative to create a UN Special Program for the Aral Sea Basin, which would allow the Aral Sea problem to become a separate area of UN work.[78] In May 2021, within the framework of the regular session of the UN Economic and Social Commission for Asia and the Pacific (UNESCAP), Turkmenistan presented the initial draft concept and structure of the future Special Program on the Aral Sea and called on all states and interested international organizations to discuss these documents.[79] In May 2023, Turkmenistan stated that it intends to resume negotiations on the draft ESCAP resolution on the establishment of a UN Special Program for the Aral Sea basin, which will be based on the provisions of the UNGA resolutions "On Cooperation between the United Nations and the IFAS" adopted in 2018 and 2019.[80]

At the Consultative Meeting of the Heads of State of Central Asia, held in Turkmenbashi (Turkmenistan) in August 2021, the Joint Statement on the results of the meeting stated that "the heads of state recognized the importance of consolidating efforts for a comprehensive solution to the problems related to the improvement of the socio-economic and environmental situation in the region, including in the Aral Sea basin, especially in areas subject to environmental crisis and the negative impact of climate change".[81]

As part of the solution to the problem of saving the Aral Sea, the creation of the **Turkmen Lake Altyn Asyr** is an important project**.** To this end, the country adopted the State Program for the Construction of Turkmen Lake Altyn Asyr and the Concept for Development of Turkmen Lake Altyn Asyr for 2019-2025. Construction of the Turkmen Lake Altyn Asyr is a major environmental project in the Karakum desert, which is aimed at collecting drainage water from irrigated lands and is designed to radically improve the ameliorative condition of agricultural lands and protect soils from degradation. Its implementation allows the rational use of collector-drainage water for the needs of the national economy, which will improve

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[78] Gurbanguly Berdimuhamedov, To new heights of progress. Selected works. Volume 12. Ashgabat: Turkmen State Publishing Service, 2020.

[79] Ibid.

[80] Address by the Delegation of Turkmenistan at the 77th Session of the UNGA (New York, 26 September 2022). https://www.mfa.gov.tm/ru/news/3363

[81] Joint Statement following the Consultative Meeting of the Heads of State of Central Asia (Turkmenbashi, 6 August 2021). Neutral Turkmenistan, 7 August 2021.

water quality in the lower reaches of the Amu Darya and have a positive impact on the environment of the entire region.

One consequence of climate change will be a water shortage and a decrease in water quality; this in turn will affect the activities of other sectors, particularly agriculture and public health. Turkmenistan considers the consolidation of international efforts to create equitable global and regional systems of water use, based on the consideration of multilateral interests, and equal access of states to water resources as a main goal. The president of Turkmenistan has repeatedly stated the need to create conditions for the active promotion of the idea of "water diplomacy" at the international level. “It is in the creation of a new political and diplomatic form of multilateral communication, which "water diplomacy" could become, that we see an opportunity for a systemic dialogue aimed at addressing all of the problems related to the formation and restoration of water resources, their reasonable and economical consumption. I am sure that such a joint activity of the world states and international organizations can become a foundation for preparation of the United Nations document on water. The UN Water Strategy could become such a document. Taking this opportunity, I propose that the participants of the World Water Forum consider this initiative of Turkmenistan in detail.”[82]

Turkmenistan steadfastly follows the principle that water is the common property of the peoples of the world and that equitable access to clean drinking water is a fundamental right of every human being. Addressing the 73rd session of the UNGA on 29 September 2018, the president of Turkmenistan stressed that the development of states, their economy, social sphere, level of well-being and quality of life of the people directly depend on access to water resources and their effective management.[83] In this regard, the head of state, speaking at the High-Level International Conference on Water for Sustainable Development, noted that "there is a clear need to develop effective formats for international cooperation on water issues".[84] In the context of climate change, one of the effective steps in this direction "could be the establishment of a specialized UN structure on water issues for Central Asia".[85]

In the context of climate change, Turkmenistan actively advocates for strengthening and obtaining effective practical results of international cooperation **in combating desertification and land degradation.** Desertification is a global environmental and

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[82] Address by the President of Turkmenistan at the VII World Water Forum (April 2015, Daegu, Republic of Korea). https://turkmenportal.com/blog/5036

[83] Gurbanguly Berdimuhamedov. To new heights of progress. Selected works. Volume 12. Ashgabat: Turkmen State Publishing Service, 2020.

[84] Address by the President of Turkmenistan at the High-Level International Conference "Water for Sustainable Development" (Dushanbe, 20 June 2018). Neutral Turkmenistan, 21 June 2018.

[85] Ibid.

socio-economic problem and is defined by the UN Convention to Combat Desertification (UNCCD) as land degradation in arid, semi-arid and dry sub-humid areas as a result of a number of factors, including climate change and human activities. Desertification is seen as a natural process of land aridization, on the one hand, and as a result of human economic activity on the other; it is a complex interaction between the fragile environment of arid land and human development of it.

Climatic changes further aggravate the situation, causing the continuation of the desertification process. In Turkmenistan, a significant amount of land is subject to degradation to varying degrees. More than 80% of the country's territory is occupied by one of the world's greatest deserts – Karakum – and with the irrational use of its vegetation and soil cover, the surface is easily subjected to deflation, which leads to the degradation of pastures and the formation of barchan dune sands.[86] These negative processes in particular intensify with climate change.

One of the most important long-term measures to combat climate change in Turkmenistan is forestation. As part of the Green Belt program, Turkmenistan has planted extensive forest strips around cities using progressive water-saving irrigation methods. In the area affected by the Aral Sea crisis and in the north of the country, extensive work has been undertaken to plant green areas to reduce the effects of climate change. In order to effectively increase the resilience of ecological systems and forestry to climate change, the National Forest Program of Turkmenistan for 2021-2025 was developed and approved. This program is designed to play a key role in preserving natural forests and expanding their area, as well as in creating artificial forest plantations.

Turkmenistan is a supporter of international cooperation on DRR, which is particularly aggravated by climate change. An effective model of international cooperation is also needed today for DRR. "Turkmenistan is a firm supporter of the fact that disaster risk reduction efforts should be systematically integrated into long-term plans and programs for sustainable development, based on close cooperation carried out by states, both at the bilateral, regional and international levels”.[87] In this direction, Turkmenistan relies on the Framework Program for Disaster Risk Reduction for 2015-2030, adopted in 2015 at the Sendai World Conference.[88]

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[86] Дуриков М., Непесов М. Вопросы борьбы с опустыниванием и деградацией земель в Туркменистане. Актуальные вопросы перехода Туркменистана к «зеленым» технологиям. Материалы научно-практической конференции (Ашхабад, 23 ноября 2021 г.). Ашхабад, 2021. С. 129.

[87] Гурбангулы Бердымухамедов. К новым высотам прогресса. Избранные произведения. Том 9. – Ашхабад: Туркменская государственная издательская служба, 2016. С. 281-282.

[88] United Nations Office for Disaster Risk Reduction (UNDRR), Sendai Framework for Disaster Risk Reduction 2015-2030. https://www.undrr.org/about-undrr

One of the newest initiatives of Turkmenistan, announced recently at the UN, is the implementation of measures to develop **low-carbon energy and the creation of an international "roadmap" for the development of hydrogen**. Speaking at the UNGA session on 25 May 2021, the president of Turkmenistan said: "We believe it is necessary to start developing a UN strategy aimed at implementing measures to develop low-carbon energy. Our second proposal is to create an international 'roadmap' under the auspices of the UN for the development of hydrogen as one of the priority directions in the energy sector".[89] These initiatives of the head of state were supported by all Central Asian states following the Consultative Meeting of the Heads of State of Central Asia held on 6 August 2021 in Turkmenbashi.[90]

Another recent initiative of the Government of Turkmenistan was the announcement that the country would be joining the Global Methane Initiative. Speaking at the 78th session of the UNGA, President Serdar Berdimuhamedov noted that "Turkmenistan considers the solution of urgent climatic and environmental problems among the key areas of UN activities for the coming years. Among them, we particularly emphasize issues related to global commitments on methane." In this context, the head of state stressed that the country is "carrying out nationwide measures to reduce and eradicate the negative consequences of methane emissions into the atmosphere as a matter of priority. First of all, we are talking about a gradual transition to the introduction and use of modern environmentally friendly and resource-saving technologies, especially in energy, industry and transport. At the same time, we welcome the efforts of the international community to implement the Global Commitment on Methane. And of course, we count here on substantive cooperation and targeted assistance from the UN specialized structures, member states and other interested partners. In this context, Turkmenistan has recently approved a roadmap for the development of international cooperation aimed at studying the issue of Turkmenistan's accession to the Global Commitment on Methane."[91]

As a party to the UNFCCC, Turkmenistan regularly prepares and submits **National Communications on Climate Change (NC)** containing official information on climate change in accordance with the requirements of the Convention; the country also conducts a national inventory of GHG emissions and

[89] Гурбангулы Бердымухамедов. К новым высотам прогресса. Избранные произведения. Том 15. – Ашхабад: Туркменская государственная издательская служба, 2023. С. 294.

[90] Joint Statement following the Consultative Meeting of the Heads of State of Central Asia (Turkmenbashi, 6 August 2021). Neutral Turkmenistan, 7 August 2021.

[91] Address by the President of Turkmenistan Serdar Berdimuhamedov at the plenary meeting of the 78th session of the UNGA. https://turkmenportal.com/blog/67336/vystuplenie-prezidenta-turkmenistana-serdara-berdymuhamedova-na-plenarnom-zasedanii-78i-sessii-genassamblei-oon

sinks, vulnerability and adaptation assessment, formulates mitigation measures and promotes capacity building and awareness raising. NCs are the most important indicator of the effectiveness of policies and measures to combat anthropogenic climate change. To date, Turkmenistan has prepared and submitted three NCs: the First NC in 2005, the Second NC in 2010 and the Third NC in 2015.

The First NC described the national conditions, the possible processes caused by them, the consequences for ecosystems and the economy and the results of the GHG emissions assessment for 1994 and measures to reduce their volume. As a result of this, the National Inventory of anthropogenic GHG emissions and discharges not controlled by the Montreal Protocol was compiled; the vulnerability of the most important sectors of the economy and ecosystems was analyzed, recommendations were made on the implementation of preparatory measures for their adaptation to possible climate changes; measures to limit anthropogenic GHG emissions in various sectors of the economy were assessed and recommendations for the adoption of national policies in this area were developed.[92]

The second NC is a logical continuation of the first one and envisages expansion of activities to address climate change in Turkmenistan.[93]

The third NC presents information on a wide range of policies and measures aimed at mitigating climate change by reducing GHG emissions and increasing GHG sinks. The results of the inventory of GHG emissions and sinks in Turkmenistan for 2000-2010 are assessed, and priority areas for reducing GHG emissions and increasing sinks are identified. As one of the world's largest resource-producing countries and fully realizing its responsibility in this regard, Turkmenistan makes maximum efforts to maintain a balance between production goals and environmental protection objectives. According to expert assessments carried out within the framework of the Third National Assembly of Turkmenistan, by 2030, the growth of the country's economy will be accompanied by a decrease in the specific weight of energy consumption per unit of gross domestic product (GDP).[94]

Under the Paris Climate Agreement, Turkmenistan is preparing an **NDC**. NDCs are a key element of the Paris Agreement and contribute to its long-term goals. They

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[92] Первое Национальное сообщение по РКИК ООН. Фаза 2. Наращивание потенциала в приоритетных областях экономики Туркменистана в связи с изменением климата. Ашхабад, 2006 г. С.7; Turkmenistan: Initial national communication on climate change UN framework convention on climate change. 2006. http://unfccc.int/resource/docs/natc/tkmnc1.pdf

[93] Second National Communication of Turkmenistan under the United Nations Framework Convention on Climate Change. Ashgabat, 2010. https://unfccc.int/sites/default/files/resource/SNC%20Turkmenistan.pdf

[94] Turkmenistan. National Communication (NC) 3. https://unfccc.int/documents/144823 https://unfccc.int/resource/docs/natc/tkmnc3.pdf

reflects country-specific efforts to reduce emissions at the national level and to adapt to the impacts of climate change. Starting in 2023, and every five years thereafter, governments will take stock of the Agreement to assess collective progress towards its objective and long-term goals. The results of this global stocktaking will inform the preparation of subsequent NDCs, which will allow for increased ambition and action on climate change.[95]

To date, Turkmenistan has prepared two NDCs; the first was submitted to the UNFCCC in October 2016 and the second in 2022. The NDCs reflect the country's intention to make appropriate contributions to reducing or curbing the growth of GHG emissions and preventing the global average temperature from rising by more than 2°C, and thus preventing the process of global climate warming.

The updated NDC, approved by the Presidential Decree of 12 May 2022, provides information and commitments by Turkmenistan to implement the Paris Climate Agreement to increase climate ambitions in line with the recommendations set out in Article 4.4.[96] The preparation of Turkmenistan's NDC shows the country's commitment to the goals of keeping the increase in global average temperature within 2°C above pre-industrial levels, while endeavoring to limit the increase to 1.5°C. The NDC adheres to the requirements of the guidance on the preparation of information to promote clarity, transparency and understanding contained in Decision 4/CMA 1 adopted at the 24th session of the UNFCCC COP24, which served as the first Meeting of the Parties to the Paris Agreement. Recognizing the reality and accepting its responsibility, Turkmenistan intends to contribute to international efforts to combat climate change. In formulating its low-carbon development policy, Turkmenistan takes into account its level of economic and technological development and the social impact of emission reductions. The country, while contributing to global efforts to mitigate climate change, should pursue a "win-win" development option of increasing the quality of economic growth and improving the living standards of the population.[97] Under the NDC, Turkmenistan aims to reduce GHG emissions by 20% by 2030 compared to the BAU scenario relative to 2010 emission levels.[98]

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[95] Nationally Determined Contributions (NDC)s. https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs

[96] Decree of the President of Turkmenistan of 12 May 2022 "On Approval of the Nationally Determined Contribution of Turkmenistan under the Paris Agreement"

[97] Turkmenistan. Nationally Determined Contribution under the Paris Agreement. Ashgabat, 2022. https://unfccc.int/sites/default/files/NDC/2023-01/NDC_Turkmenistan_12-05-2022_approv.%20by%20Decree_Rus.pdf

[98] Ibid.

In order to fulfil its obligations under the UNFCCC, the country maintains a greenhouse gas inventory (GHG inventory count), which entails the collection, processing, storage and analysis of data required to assess, calculate or measure actual GHG emissions and removals. The purpose of the GHG inventory is to create an information base on the amount of GHG emissions and their sources, as well as the activities undertaken to reduce these emissions. Information on GHG should be provided in the national inventories of anthropogenic emissions by sources and removals by sinks of GHGs that are being developed.

The development process for implementation has now begun in Turkmenistan:

- The Fourth NC of Turkmenistan and the First Biennial Update Report under the UNFCCC (BR):[99] The BR is being developed in accordance with the requirements of the "UNFCCC Guidelines for the submission of BRs by developed country Parties" contained in Annex I to COP Decision 2/CP.17.
- National Adaptation Plan (NAP) and National Mitigation Plan (NMP), which will form part of a wider green economy plan.
- A national inventory system on GHG emissions and effluents.
- A national Climate Change Measurement, Reporting and Verification (MRV) system to inform the COP on progress in implementing the Convention, including on GHG emissions and removals from sources.
- Under the TNSCC, a National Clean Climate Fund will be developed, the budget of which can be formed from various domestic, external as well as innovative sources of financing for Turkmenistan.[100]

[99] The UNDP is contributing to Turkmenistan's commitments under the Paris Climate Agreement by strengthening Turkmenistan's national greenhouse gas inventory system. https://www.undp.org/ru/turkmenistan/press-releases/proon-sodeystvuet-vypolneniyu-obyazatelstv-turkmenistana-po-parizhskomu-soglasheniyu-po-klimatu-ukreplyaya-nacionalnuyu; Turkmenistan prepares First Biennial Update Report on Climate Change. https://turkmenistan.gov.tm/index.php/ru/post/61381/turkmenistan-gotovit-pervyj-dvuhgodichnyj-obnovlennyj-doklad-ob-izmenenii-klimata

[100] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

5 Policy and legal instruments for climate change mitigation and adaptation in Turkmenistan

The Grantham Research Institute for Climate Change and the Environment and the Centre for Climate Change Economics and Policy at the London School of Economics and Political Science maintain a database of relevant national policies and legislation (CCLW).[101] This is collectively referred to as “climate change legislation” or “climate law” and consists of the laws and policies that govern climate change actions, setting out their legal framework. The term is used broadly and can include laws, regulations, and policies that are enacted or promulgated by both the legislative and executive branches of government. These laws and policies relate to actions falling within the scope of climate change mitigation, adaptation and DRM.[102]

It seems that this classification reflects the system of existing normative legal acts, strategies and programs adopted in Turkmenistan, so it is important to follow the same classification when analyzing these documents.

5.1 Climate Change Mitigation Policy and Legislation

5.1.1 General characterization of mitigation of climate change impacts

“Mitigation" is defined in a variety of sources, including scientific studies, reports and papers at different levels. Mitigation is a term derived from the English word meaning "easing of effects". It encompasses all actions taken by governmental structures and the population prior to an emergency, including preparedness and long-term risk reduction. In a broader sense, mitigation implies planning and implementation of measures to reduce the risk associated with natural, man-made,

[101] Climate Change Laws of the World: Law and Policy Search. https://climate-laws.org

[102] Ibid.

environmental and bio-social emergencies, as well as the process of planning an effective response to them when they occur.[103]

The Glossary (Annex II) of the IPCC Fifth Assessment Report defines "climate change mitigation" as anthropogenic intervention to reduce the number of sources or increase the number of sinks for GHGs. This report also assesses anthropogenic intervention to reduce sources of other substances that may contribute directly or indirectly to limiting climate change, including, for example, reductions in the emissions of particulate matter that may directly alter the radiative balance (e.g., black carbon) or measures that control the emissions of carbon monoxide, nitrous oxides, volatile organic compounds and other pollutants (PT) that may alter the tropospheric ozone concentrations that have an indirect effect on climate change.[104] The Glossary (Annex VII) of the IPCC Sixth Assessment Report defines "climate change mitigation" as measures to limit climate change by reducing GHG emissions or removing these gases from the atmosphere.[105] According to Karl S. Coplan "Climate change mitigation" refers to measures taken to reduce GHG emissions in order to reduce or "mitigate" the severity of anthropogenic global warming.[106] There are many other definitions that are fundamentally about measures to reduce GHG emissions.

In much national legislation and in the Paris Agreement, the term “decarburization” is used instead of “mitigation”. Decarburization requires active policies aimed at restructuring economic activity and land-use reorganization along

[103] Strategy and general characterization of mitigating measures. //studopedia.ru/4_97713_strategiya-i-obshchaya-harakteristika-mer-mitigatsii.html

[104] МГЭИК, 2014 г.: Приложение II: Глоссарий [Мэк, К. Дж., С. Плантон и К. фон Штехов (редакторы)]. В: Изменение климата, 2014 г.: Обобщающий доклад. Вклад Рабочих групп I, II и III в Пятый оценочный доклад Межправительственной группы экспертов по изменению климата [Основная группа авторов: Р. К. Пачаури и Л. А. Мейер (редакторы)]. МГЭИК, Женева, Швейцария. С. 133-148.

[105] МГЭИК, 2021: Приложение VII: Глоссарий [Мэттьюз, Дж. Б.Р., В. Мёллер, Р. ван Димен, Дж. С. Фуглестведт, В. Массон-Дельмотт, К. Мендес, С. Семенов, А. Райзингер (ред.)]. «Изменении климата 2021: Физическая научная основа». Вклад Рабочей группы I в шестой оценочный отчет Межправительственной группы экспертов по изменению климата [Массон-Дельмотт, В., П. Зай, А. Пирани, С.Л. Коннорс, К. Пеан, С. Бергер, Н. Код, Ю. Чен, Л. Гольдфарб, М.И. Гомис, М. Хуанг, К. Лейцель, Э. Лонной, Дж. Б. Р. Мэтьюз, Т. К. Мэйкок, Т. Уотерфилд, О. Йелекчи, Р. Ю и Б. Чжоу (ред.)]. Изд-во Кембриджского университета, Кембридж, Соединенное Королевство и Нью-Йорк, штат Нью-Йорк, США. С. 2215–2256, doi: 10.1017/9781009157896.022.

[106] Climate Change Law: An Introduction Foundations of Environmental Law series Karl S. Coplan, Shelby D. Coplan, Shelby D. Green, Katrina Fischer Kuh, Smita Narula, Karl R. Rábago, and Radina Valova 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925373047806986&context=L&vid=420CKIS_INST:UKAZ

four dimensions: decarburization of energy sources, electrification, energy efficiency and conservation and increased use of natural carbon sinks.[107]

Thus, the above definitions of mitigation of climate change impacts or effects primarily refer to the reduction of GHG emissions, which is currently considered to be the main cause of climate change. In addition, it should be noted that the definitions presented here refer to mitigation of impacts in one case and the mitigation of climate change in the other. However, climate change mitigation has a very different meaning from adaptation.[108] Therefore, it seems appropriate to speak of the mitigation of climate change impacts or climate change mitigation.

The 2014 ICRI report identified anthropogenic GHGs as the main cause of global warming.[109] GHG emissions from human activities increase the greenhouse effect, contributing to climate change. Most carbon dioxide is produced by burning fossil fuels, such as coal, oil and natural gas. Human-caused emissions have increased the amount of carbon dioxide in the atmosphere by about 50% compared to pre-industrial levels. Emissions in the 2010s averaged 56 billion tons per year, higher than ever before. In 2016, energy (electricity, heat and transport) accounted for 73.2% of GHG emissions, with direct industrial processes at 5.2%, waste 3.2%, and agriculture, forestry and land use 18.4%.[110] Agriculture and forestry thus accounted for almost 20 per cent of GHG emissions.

The UNFCCC devotes several articles to climate change mitigation. According to Article 3, "Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and to mitigate its adverse effects". Article 4 of the Convention obliges parties to develop, update and publish "national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol, and to formulate, implement, publish, and regularly update "national and, as appropriate, regional programs containing mitigation measures". In addition, parties at COP sessions are to consider NSs with the objective of bringing GHG emissions individually or collectively to 1990 levels.

In the Paris Agreement, one of the fundamental principles is the participation of all countries in mitigating climate change. Article 2(1)(a) defines the mitigation objective of the Paris Agreement in terms of two temperature targets (2°C and

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[107] World Bank. Reference Guide to Climate Change. Framework Legislation. 2020.

[108] Богров Е. Предварительный вариант для обсуждения изменение климата. Глоссарий терминов, используемых в работе РКИК ООН. https://pandia.ru/text/80/124/53443.php

[109] Climate Change 2014. Synthesis Report. Summary for Policymakers. New York, 2015.

[110] Climate change mitigation. https://en.wikipedia.org/wiki/Climate_change_mitigation; see also Ричи, Ханна; Розер, Макс; Росадо, Пабло (11 мая 2020 г.). «Выбросы CO_2 и парниковых газов». Наш мир в данных.

1.5°C). Article 3 introduces the concept of "nationally determined contributions to the global response to climate change", referring to, inter alia, Article 4. Nationally determined contributions are a key element of the Paris Agreement and contribute to its long-term goals. NDCs reflect country-specific efforts to reduce emissions at the national level. Unlike the Kyoto Protocol, where quantified emission limitation and reduction commitments were agreed and annexed to the treaty, the Paris Agreement is based on a "bottom-up approach" whereby each state must define the scope of its contribution.[111] Article 4 details the Paris Agreement's provisions on climate change mitigation. These provisions are aimed at realizing the global mitigation objective set out in Article 2(1)(a), and they build on the concept of nationally determined contributions introduced by Article 3. Article 4 is complemented by Article 5, which contains more specific provisions on GHG sinks and storage facilities, and Article 6 on the international transfer of mitigation results. Implementation of Article 4 is supported by Articles 9, 10 and 11, which contain provisions on financing, technology and capacity building, among others, for mitigation measures. The enhanced transparency system of Article 13, the global analysis of Article 14 and the implementation and compliance mechanism of Article 15 aim to monitor and facilitate effective climate change action, including mitigation measures.[112] Perhaps more importantly, Article 4(1) is the first treaty provision to recognize the need to end net GHG emissions in the long term – namely, in the second half of this century.[113]

The Paris Agreement provides a framework to support countries in need of financial, technological and capacity-building assistance. The Agreement emphasizes that developed countries should take the lead in mobilizing financial resources to support more vulnerable countries. However, other countries are also called upon to provide appropriate financial assistance. Climate finance is necessary for climate change mitigation, as large-scale investments are needed to significantly reduce emissions.[114]

Mitigation measures can reduce GHG emissions by switching to sustainable energy sources, saving energy and improving energy efficiency. In addition, CO_2 can

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[111] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

[112] Ibid.

[113] Ibid.

[114] What is the Paris Agreement? https://unfccc.int/ru/informaciya-ob-onuv/chto-takoe-parizhskoe-soglashenie

be removed from the atmosphere by expanding forests, restoring wetlands and other climate change mitigation measures.

5.1.2 Turkmenistan's climate change mitigation activities

Turkmenistan strives to limit GHG emissions and improve the country's ability to respond to climate change. Currently, the country is successfully implementing national projects that directly or indirectly contribute to mitigation of climate change impacts and provide for measures to reduce GHG emissions. The Government of Turkmenistan has made significant efforts to reduce GHG emissions by adopting several mitigation policy measures and has committed to increasing fuel efficiency in power plants by modernizing fossil fuel combustion systems, increasing the share of natural gas and RES in the fuel and energy balance, improving energy efficiency in public utilities and modernizing heating systems in the industrial sector. In terms of policy framework related to climate change adaptation, Turkmenistan has initiated the development of several policy documents aimed at improving national agricultural and forestry management practices, promoting socio-economic reforms and improving policies related to the monitoring and management of hydrometeorological services.[115]

Climate change mitigation measures are included in national strategies and programs, enshrined in national legislation and aimed at using modern environmentally friendly and resource-saving technologies in the oil and gas, energy, transport and other sectors of the economy.

In order to reduce methane emissions, the Interdepartmental Group on Methane Emissions Reduction was established by the Presidential Decision of 2 June 2023, and the composition of the Interdepartmental Group was approved, including representatives of the main sectors related to methane emissions and GHG in general. In accordance with the statute, the Interdepartmental Group is responsible for assisting in the implementation of international agreements on methane and improving coordination and pooling efforts of all stakeholders to reduce methane emissions in Turkmenistan.[116]

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[115] Turkmenistan. Review of climate change activities. October 2013. file:///C:/Users/Asus/Desktop/Turkmenistan_Climate_Change_Profile_RUS.pdf

[116] Decree of the President of Turkmenistan dated May 12, 2022 “On approval of the contribution of Turkmenistan to the Paris Agreement established at the National level”

The Government of Turkmenistan has also approved a roadmap for the development of international cooperation aimed at exploring Turkmenistan's accession to the Global Methane Commitment.[117]

An inventory of GHGs is underway in Turkmenistan. It was carried out for the first time in 1998 while preparing the First NC on the basis of 1994 data. Later, in 2006-2009, such work was carried out in preparation of the Second NC based on data from 1995-2004, and the Third NC based on data from 2005-2010.

CO_2 emissions from the country's energy sector in 2018 were 69 million tons (11.8 tons per capita), of which 72% came from the combustion of natural gas and 28% from the combustion of petroleum products.[118]

In accordance with the TNSCC and the NDC, the main sectors of the economy whose activities are associated with GHG emissions have been identified. They come from the oil and gas, energy, agriculture, transport and housing and utilities sectors. The largest share of these emissions are fugitive emissions from oil and gas activities (36%), followed by population (23%), electricity (22%), transport (13%) and the utilities sector (6%). The remaining sources together account for less than 1%.[119]

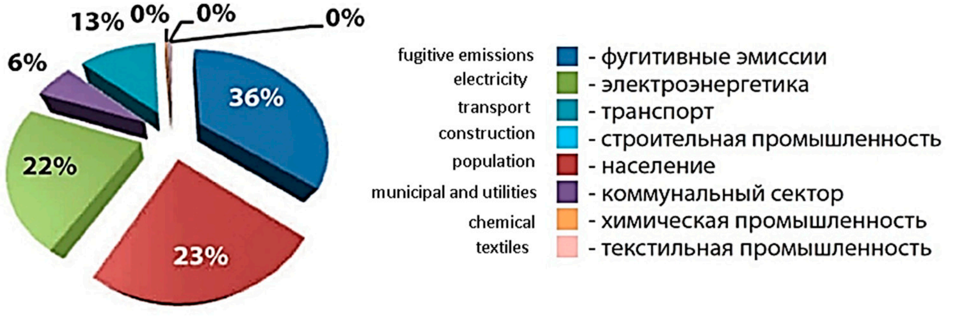

Figure 2: Greenhouse gas emissions in the energy sector in 2010.
Source: Turkmenistan's National Climate Change Strategy, 2019.

According to the results of emissions assessment for the 18 years from 2000 to 2017, the total amount of GHG emissions in the country increased more than two times.

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117 Turkmenistan aims to join the Global Methane Commitment Accessed. https://www.newscentralasia.net/2023/06/12/turkmenistan-natselen-prisoyedinitsya-k-globalnomu-metanovomu-obyazatelstvu/

118 International Energy Agency. https://www.iea.org/data-and-statistics?country=TURKMENIST&fuel=CO2%20emissions&indicator=CO2BySource

119 National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

Based on the inventory of GHG emissions and sinks in Turkmenistan for 2000-2010, it was shown that the country's contribution to global climate warming is slightly increasing and amounts to about 67,000 Gg. The main GHGs are CO_2 (carbon dioxide) and CH_4 (methane). The inventory takes into account GHG emissions from key sectors of the economy, which account for 97% of total emissions. The inventory results allowed the identifying of priority areas of activity to reduce GHG emissions and increase GHG sinks, as well as attracting modern technologies and investments. The share of the energy sector in total GHG emissions is 85%.[120] At the same time, the assessment of gross GHG emissions for the period from 2011 to 2017 shows that their growth rate is decreasing compared to the period from 2000 to 2010.[121]

[120] Ibid; Turkmenistan. National Communication (NC) 3. https://unfccc.int/documents/144823

[121] Ibid.

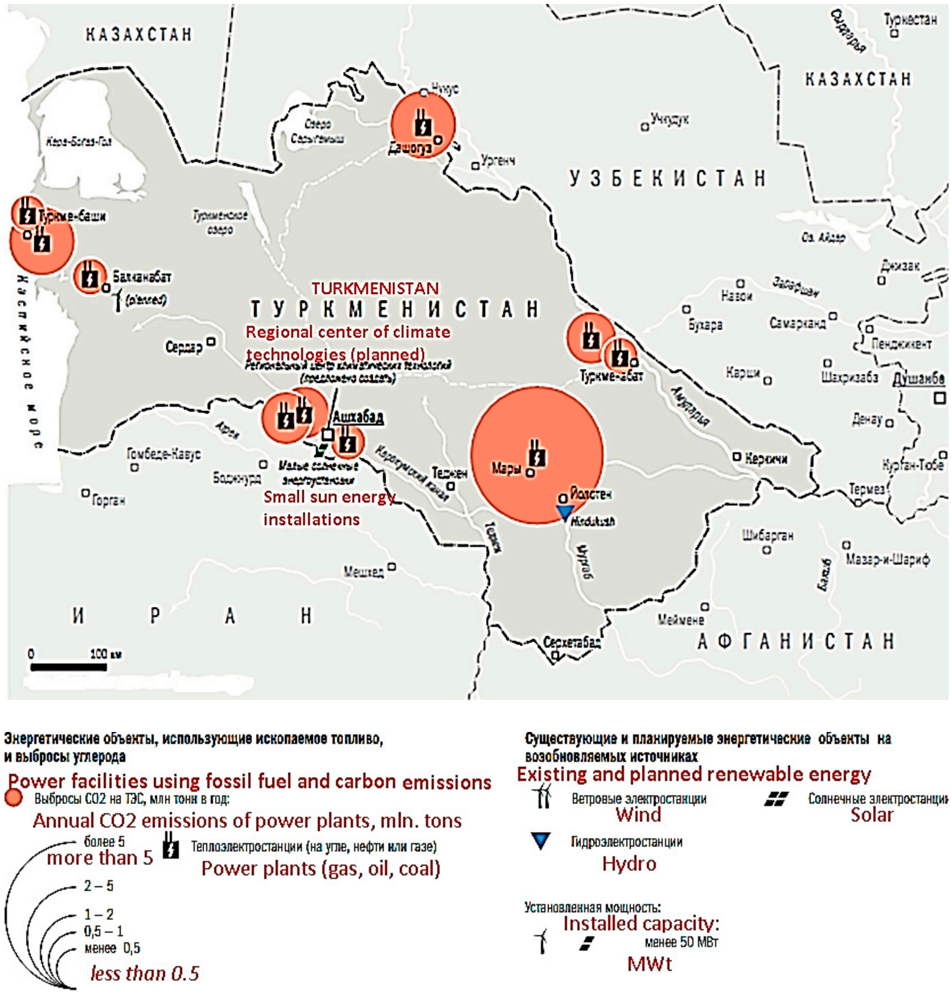

Figure 3: Energy and greenhouse gas emissions. Source: Turkmenistan climate: facts and policies

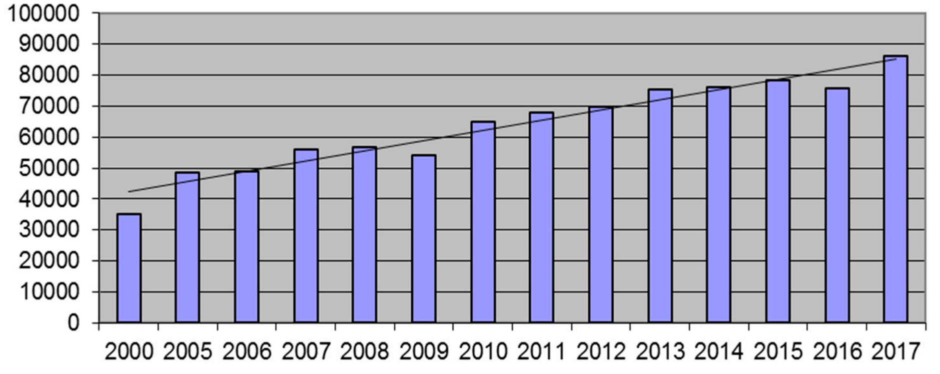

Figure 4: Total greenhouse gas emissions of Gg CO2 in Turkmenistan for 2000-2017 (baseline approach). Source: Turkmenistan's National Climate Change Strategy, 2019

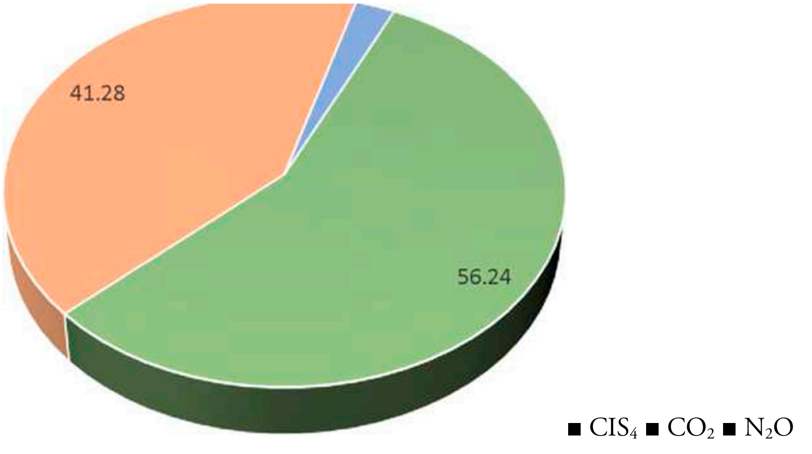

Figure 5: Direct greenhouse gas emissions (2010). Source: NDC Turkmenistan 2022.

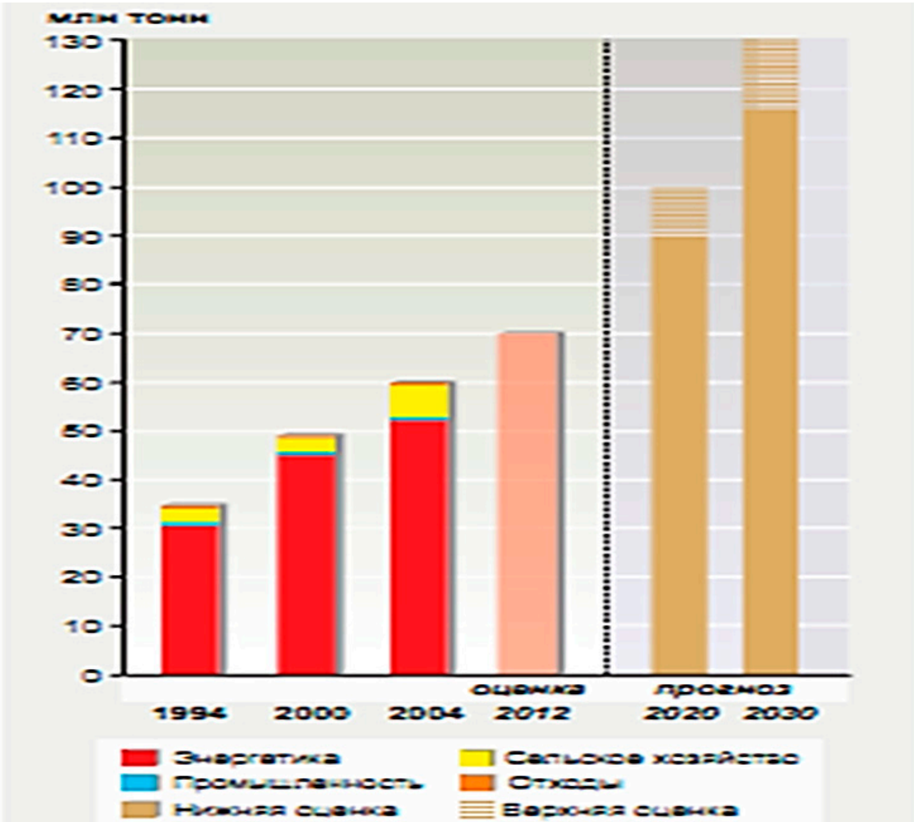

Figure 6: Greenhouse gas emissions in Turkmenistan and their expected change (in million tons): estimated for 2012, forecast for 2020-2030, main sources – energy (red) and agriculture (yellow). Source: Turkmenistan climate: facts and policies

Measures to reduce GHG emissions in Turkmenistan have been identified for the implementation of climate change mitigation policy in key sectors of the economy. It is planned that these measures will be implemented in the production, consumption and transportation of hydrocarbons (including prevention of methane leaks), alongside the introduction of energy savings and energy efficiency, the development of RES, the optimization of agriculture and waste management. Special attention will be given to the implementation of projects related to the absorption of carbon dioxide from the atmosphere in such areas as reforestation and afforestation, non-depletion forestry and preventive anti-erosion measures, as well as sustainable waste management and the development of sustainable transport as part of the country's efforts to achieve socio-economic development goals.

The reduction of GHG emissions can be achieved through the development, application and dissemination of methods and technologies leading to the limitation, reduction or cessation of anthropogenic emissions in all the aforementioned sectors. Taking this into account, the country annually finance on the commissioning of new technological equipment in the oil and gas sector, the electric power industry, other industry and transport, as well as on reconstruction of gas trunk pipelines using state funds. In particular, the combined cycle power plant built in Mary (costing USD 1.2 billion) reduces GHG emissions by 3.1 million tons of CO_2 annually. A new 432 MW gas turbine (costing USD 350 million) was built at the Lebap power plant and commissioned in September 2021, which makes it possible to achieve a reduction of GHG emissions by 128,000 tons of CO_2 per year.[122]

At the same time, it should be noted that, unfortunately, the preparation of national reports and the inventory of GHGs has not been carried out on regularly thus far, and the legal basis for a GHG inventory to obtain the baseline data necessary to assess the degree of impact of GHG emissions on the atmosphere has not been formed. In this regard, it is important to create a full-fledged inventory system with the help of legal instruments in order to form an information system for GHG emissions and absorption accounting, the maintenance of the state GHG inventory, the creation of a database for the development of programs and measures to reduce emissions and increase GHG absorption.

5.1.3 Policy instruments for climate change mitigation

National climate change mitigation strategies, programs and plans play an important role in implementing measures to build resilience and reduce vulnerability to climate change.

Turkmenistan's National Strategy on Climate Change (2019). In order to realize its international commitments, Turkmenistan adopted the TNSCC first in 2012 and then in a new version in 2019. This represents the national vision of climate change issues and serves as the basis for the formation and implementation of Turkmenistan's state policy on issues related to climate change and its consequences. The objective of the TNSCC is to ensure sustainable development of the country, including the economic, food, water and environmental components, to the impacts of climate change by creating a robust enabling environment, defining an effective and coherent climate change adaptation process for all priority sectors and developing effective mitigation measures that accelerate low-carbon development of the country. Measures are envisaged to mitigate and consequently reduce GHG

[122] Nationally Determined Contribution under the Paris Agreement. Ashgabat, 2022. https://unfccc.int/sites/default/files/NDC/2023-01/NDC_Turkmenistan_12-05-2022_approv.%20by%20Decree_Rus.pdf

emissions. The main focus is on sectors such as oil and gas, electricity, industry and communications, as well as utilities and waste management.[123]

The Paris Agreement Nationally Determined Contribution (2022) shows the country's commitment to the Paris Agreement goals of keeping the increase in global average temperature well within 2°C above pre-industrial levels while endeavoring to limit the increase to 1.5°C. The country's NDC (2022) shows the country's commitment to the Paris Agreement goals of keeping the increase in global average temperature well below 2°C compared to pre-industrial levels, while endeavoring to limit the increase to 1.5°C. The NDC is an affirmation of Turkmenistan's ambitious goal of reducing its GHG emissions by 2030. This target remains the highest possible ambition that Turkmenistan can achieve through GHG reduction measures in sectors such as energy, transport, agriculture, industrial processes and product utilization, waste and through the utilization of the mitigation co-benefits of climate change adaptation measures.[124]

Turkmenistan's approach to the equity and ambition review is to assess the extent to which the country is contributing to the achievement of the UNFCCC and Paris Agreement targets to achieve the stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic impacts on the climate system. Based on the 2030 target in Turkmenistan's stated NDC, a breaking of the link between economic growth and GHG emissions into the atmosphere can be achieved. The country will see a reduction in GHG emissions per unit of GDP. At the same time, the stabilization of emissions by 2030 will not create obstacles to the country's socio-economic development and is consistent with the overall goals of economic development, energy efficiency, reducing the energy intensity of the economy and increasing the share of RES in the energy balance of Turkmenistan. Stabilizing or starting to reduce GHG emissions by 2030 will allow Turkmenistan to reach a low-carbon economic development trajectory. The ambition of Turkmenistan's NDC is expressed in a 20% reduction in GHG emissions in 2030 compared to the BAU scenario relative to 2010 emissions levels.[125] The BAU ("Business as Usual") scenario assumes that government policies, technologies and social preferences continue to evolve as they have in the recent past.

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[123] National Strategy of Turkmenistan on Climate Change (new version). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[124] Nationally Determined Contribution under the Paris Agreement. Ashgabat, 2022. https://unfccc.int/sites/default/files/NDC/2023-01/NDC_Turkmenistan_12-05-2022_approv.%20by%20Decree_Rus.pdf

[125] Ibid.

The NDC includes a Mitigation Contribution with a list of activities, as well as an Implementation Plan for the Paris Climate Agreement in Turkmenistan. The mitigation contribution encompasses the rationale, objectives, commitments, specific measures, responsible organizations, as well as the status of implementation and timing of the measures. At the same time, all climate change activities, including mitigation measures for sectoral agencies contained in the National Strategy, will be mandatorily implemented in accordance with the timeframes specified in the Plan for the Implementation of the Paris Climate Agreement in Turkmenistan.[126]

At the same time, it seems that Turkmenistan's accession to the Global Commitment on Methane increases the responsibility of the state to reduce GHG emissions and necessitates a revision to the volume of such emissions, as well as to the definition of specific timeframes for achieving carbon neutrality. Having huge reserves of hydrocarbon resources and extracting and exporting them to world markets, it is important to emphasize the further reduction of methane in strategic and sectoral documents in the oil and gas sector.

Turkmenistan's National Communications under the UNFCCC are a source of official information on climate change and the mitigation measures being implemented related to GHG emission reductions, as well as in response to the main needs of different sectors.

The Program of Socio-Economic Development of Turkmenistan for 2011-2030 is one of the most important documents, providing for a wide range of measures aimed at mitigating climate change impacts by reducing emissions and increasing GHG absorption. According to indicators and forecasts, the Program provides for the planning of industrial production, taking into account energy consumption in the context of the increasing energy efficiency of the economy as a whole. It envisages a transition to an economy based on industrial and innovative development. The Program is also aimed at the production of high quality, competitive products in the country with the introduction of modern energy-saving and environmentally friendly technologies. Within the framework of this Program, the Government of Turkmenistan is pursuing an energy savings policy.[127]

The National Program of Socio-Economic Development of Turkmenistan for 2022-2052 provides for measures to develop processing and production sectors based on advanced, environmentally friendly technologies. This involves strengthening and expanding Turkmenistan's global competitive advantage in such

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[126] Ibid.

[127] Program of Socio-Economic Development of Turkmenistan for the period 2011-2030. Approved by the Decree of the President of Turkmenistan of 14 May 2010, No. 11061. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2010. No. 5. Art. 865.

traditional spheres of activity as energy, transport, agriculture and the processing of natural resources. The National Program also provides for measures to ensure environmental security, as well as to improve ecology and the environmental protection system.[128]

The President's program for the socio-economic development of Turkmenistan for 2019-2025 defines the priority of the investment policy as the diversification of the GDP sectoral structure through the creation of new industries, both export-oriented and import-substituting, for innovative, industrial-focused economic development.[129]

The State Energy Saving Program for 2018-2024 is aimed at energy savings and energy efficiency improvement in all sectors of the economy, increasing the efficiency and the competitiveness of the national economy, as well as environmental protection. In the oil and gas sector, the priority area of energy savings is the introduction of new advanced technologies and the latest achievements of world science over the entire production cycle, from geological exploration, development and exploitation of oil and gas fields to the transportation, storage and processing of oil and gas. The main measures include the use of modern methods for controlling the amount of pollutant emissions, automatic systems for detecting leaks and emissions on main oil and gas pipelines and gas distribution networks, modernization of equipment, introduction of new equipment and technologies for the utilization of associated gases at oil fields and the improvement of the oil and gas transportation and consumption metering system. Other sectors envisage the modernization and technical re-equipment of enterprises, the introduction of modern resource-saving technologies and the latest scientific and technical developments and the improvement of systems for metering and consuming energy resources.[130]

The National Strategy of Turkmenistan for the Development of Renewable Energy for the period until 2030 helps to fulfill the obligations under international conventions on climate change and environmental protection. The National Strategy aims to develop and effectively utilize RES, which will ensure climate

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[128] National Program of Socio-Economic Development of Turkmenistan for 2022-2052. Approved by the Decree of the President of Turkmenistan of 11 February 2022, No. 2601. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2022. No. 2. Art. 2149.

[129] Program of the President of Turkmenistan on socio-economic development of the country for 2019-2025. Approved by the Decree of the President of Turkmenistan of 1 February 2019, No. 1111. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 2. Art. 1045.

[130] State Program on Energy Saving for 2018-2024. Approved by Presidential Decree of 21 February 2018, No. 674.

change mitigation measures and reduce GHG emissions. To this end, the Strategy envisages improvement of the structure of the electricity sector, diversification of energy resources, and ensuring energy security of the country. Among the socially significant goals is to provide remote regions with low-cost and clean energy. The Strategy is designed to promote the development of activities of state organizations and the private sector related to the production, consumption and sale of heat and electricity using RES, the development and introduction of environmentally friendly technologies in the work on RES development and safe and minimally hazardous waste treatment technologies.[131]

The National Program for the phase-out of ozone-depleting substances (2007) provides for the phase-out of ozone-depleting substances and includes measures to protect the ozone layer within the framework of Turkmenistan's obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer.

5.1.4 Climate Change Mitigation Legislation

Turkmenistan's climate legislation is currently being formed primarily within the framework of environmental legislation, which is being adapted to address the challenges of climate change by making necessary amendments and additions. At present, climate change mitigation occupies the leading place in the structure of climate legislation.

The Law "On Nature Protection" (2014) refers to "climate" as an independent component of the environment subject to protection; it defines the "climate system" as the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interaction. The law provides for measures to combat climate change and mitigate its negative effects by establishing requirements for climate protection measures to be included in relevant plans and programs for the development of industries, production and territories. In addition, there is a requirement to develop an inventory of anthropogenic emissions from sources and absorption by sinks of all GHGs, to regulate the production and use of substances negatively affecting the climate, to introduce and apply technologies, methods and processes that contribute to the reduction or cessation of anthropogenic GHG emissions and to carry out other measures for climate system protection.[132]

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[131] National Strategy of Turkmenistan on the development of renewable energy for the period up to 2030. Approved by the Decree of the President of Turkmenistan of 4 December 2020.

[132] Law of Turkmenistan "On Nature Protection" of 1 March 2014. Statements of Mejlis of Turkmenistan. 2014. No. 1. Art. 40.

Climate legislation in the area of climate change mitigation should include legislation on the protection of the ozone layer and the protection of atmospheric air. Among them, the laws "On the Protection of the Ozone Layer" and "On the Protection of Atmospheric Air" have an important place. The preamble to the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer emphasizes the potential impact of ozone depleting substance (ODS) emissions on the climate.[133] The protection of the ozone layer is therefore an important area of climate protection, and its preservation leads to increased resilience to climate change.

Turkmenistan is a party to the Vienna Convention for the Protection of the Ozone Layer[134] and the Montreal Protocol on Substances that Deplete the Ozone Layer,[135] and has acceded to and ratified all four amendments to the Montreal Protocol: the London Amendment of 1993 and the Copenhagen, Montreal and Beijing Amendments of 2008,[136] as well as the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer.[137] The Kigali Amendment provides a new goal of mitigating global climate change. The measures in the amendment should reduce the increase in global temperature by about 0.5°C. The amendment adds potent GHGs and hydrofluorocarbons (HFC)s to the list of substances regulated under the Protocol that will be phased out, requiring the parties to the Montreal Protocol to phase out HFCs by 80-85 % by the end of 2040.

The Law "On Protection of the Ozone Layer" (2009) provides for measures to combat climate change by regulating ODS emissions, thus contributing to the reduction of GHG emissions. The law introduces restrictions and prohibitions on handling ODS and products containing them; it establishes the procedure for handling ODS and licensing activities related to their export, import and production

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133 Montreal Protocol on Substances that Deplete the Ozone Layer of 16 September 1987. https://www.un.org/ru/documents/decl_conv/conventions/pdf/montreal.pdf.

134 Decision of the President of Turkmenistan of 3 August 1993 on accession to the Vienna Convention for the Protection of the Ozone Layer. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1993. No. 8. Art. 1465.

135 Decree of the President of Turkmenistan of 3 August 1993 on accession to the Montreal Protocol on Substances that Deplete the Ozone Layer Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1993. No. 8. Art. 1465.

136 Decree of the President of Turkmenistan of 3 August 1993 on accession to the London Amendment of the Montreal Protocol. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1993. No. 8. Art. 1465; Decision of the Mejlis of Turkmenistan of 22 January 2008 on accession to the Copenhagen, Montreal and Beijing amendments to the Montreal Protocol. Statements of Mejlis of Turkmenistan. 2008. No. 1. Art. 3.

137 Decision of the Mejlis of Turkmenistan of 22 August 2020 on ratification of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer. Statements of Mejlis of Turkmenistan. 2020. No. 3. Art. 54.

and (or) products containing ODS. It also provides control over compliance with legislation on the protection of the ozone layer, provides liability measures for the violation of legislation on the protection of the ozone layer and provides free access to information pertaining to ODS handling.[138] The classification of legislation on the protection of the Earth's ozone layer as climate legislation is due, in our view, to the adoption of the Kigali amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer, in which HFCs are classified as substances that have a negative impact on climate change and will be gradually reduced.

The international legal protection of the atmosphere is most closely related to the problem of global warming or climate change. In this context, the **Law "On Atmospheric Air Protection" (2016)** establishes a legal framework for the implementation of measures to mitigate climate change by regulating not only pollutant emissions, but also GHG emissions. In particular, the Law provides for measures to protect the climate from anthropogenic climate change and inventory pollutant and GHG emissions into the atmospheric air in order to identify and account for all emission sources and determine the quantitative and qualitative indicators of emissions, as well as the development of the State Cadaster of Pollutant and GHG emissions into the atmospheric air. According to the Law, individuals and legal entities that have sources of pollutant emissions into the atmospheric air and harmful physical impacts on it shall conduct an inventory of pollutant emissions into the atmospheric air, harmful physical impacts on the atmospheric air and their sources. According to the results of the inventory, the enterprises are to keep reports.[139] The law creates a legal basis for the development of climate legislation, making it mandatory to adopt a number of bylaws on issues regulating GHG emissions.

The Law "On Hydrometeorological Activity" (1999) regulates the observation, collection, processing, analysis, storage and use of information on the state of the environment. Hydrometeorological services carry out the observation of the state of the ionospheric and ozone layer, and the assessment and forecasting of the changes occurring in it. They also carry out the measurement, assessment and forecasting of the state of the ozone layer, as well as the level of surface ultraviolet solar radiation over the territory of the country.[140]

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[138] Law of Turkmenistan "On Protection of the Ozone Layer" of 15 August 2009. Statements of Mejlis of Turkmenistan. 2009. No. 3. Art. 54.

[139] Law of Turkmenistan "On the Protection of Atmospheric Air" of 26 March 2016. Statements of Mejlis of Turkmenistan. 2016. No. 1. Art. 51.

[140] The Law of Turkmenistan "On Hydrometeorological Activity" of 15 September 1999 (amended 18 April 2009 and 26 November 2010). Statements of Mejlis of Turkmenistan. 1999. No. 3. Art. 46.

The Law "On Renewable Energy Sources" (2021) provides for measures to develop and implement general state plans for RES, to develop and implement environmentally friendly technologies for RES development and safe technologies for waste recycling, to stimulate activities for the construction and operation of installations for the use of solar energy, heating and electricity generation and to support the construction of energy efficient buildings in cities and other settlements, the energy supply of which is fully or partially provided by the state.[141]

The Law "On Waste" (2015) aims to reduce waste generation and, accordingly, to mitigate climate change impacts by reducing GHG emissions from waste. The law provides for the use of the latest scientific and technical achievements in order to implement low-waste and zero-waste technologies (closed production cycle), to ensure the integrated processing of material and raw material resources in order to reduce the amount of waste and to minimize waste in production and economic activities.[142]

The Law "On Environmental Expertise" (2014) regulates relations in the field of environmental expertise and is aimed at preventing the negative impact of planned economic and other activities on the environment and public health.[143]

The Law "On Environmental Safety" (2017) regulates environmental safety in the implementation of economic and other activities, and provides for a set of measures, including the planning and financing of programs for environmental safety. The prevention of threats to environmental safety is also provided through environmental impact assessments (EIA), state environmental expertise, audits, licensing and certification.[144]

In Turkmenistan, the main source of emissions is the energy sector (combustion of natural gas in various sectors and methane leaks during gas production, transport and distribution). In order to mitigate the impacts of climate change, a number of laws have been adopted that provide specific requirements to limit such emissions. These include the laws **"On Hydrocarbon Resources"**[145] and **"On Hydrocarbon Gas**

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[141] Law of Turkmenistan "On Renewable Energy Sources" of 13 March 2021. https://minjust.gov.tm/ru/hukuk/merkezi/hukuk/222

[142] Law of Turkmenistan "On Waste" of 23 May 2015. Statements of Mejlis of Turkmenistan. 2015. No. 2. Art. 59.

[143] Law of Turkmenistan "On Environmental Expertise" of 16 August 2014. Statements of Mejlis of Turkmenistan. 2014. No. 3. Art. 108.

[144] Law of Turkmenistan "On Environmental Safety" of 3 June 2017 Statements of Mejlis of Turkmenistan. 2017. No. 2. Art. 72. http://minjust.gov.tm/mcenter-single-ru/179

[145] The Law of Turkmenistan "On Hydrocarbon Resources" of 18 August 2008 Statements of Mejlis of Turkmenistan. 2008. No. 3. Art. 40.

and Gas Supply",[146] which are aimed at limiting the emissions of PT and GHGs into the atmosphere through the use of modern equipment and technologies to prevent the combustion or release of natural gas, as well as environmental monitoring and other measures. The **Law "On Electric Power Industry"** is aimed at increasing the capacity of the country's electric power system for the further modernization of the industry and the use of innovative energy-saving technologies and equipment.[147]

The main source of atmospheric emissions is transport. The transport sector in Turkmenistan includes road, railway, aviation, river, sea and pipeline transport networks. Significant growth in the vehicle fleet and transport services has been accompanied by intensive growth of gasoline and diesel consumption, which causes an increase in GHG emissions. Transport systems have a significant impact on the environment, accounting on average for about 10% of GHG emissions in Turkmenistan.[148]

Turkmenistan is doing a lot of work to mitigate the consequences related to transport emissions. Almost all road transport is exported from foreign countries, mainly entailing vehicles that are no more than five years old. A gradual transition to other cleaner and more economical fuels, including compressed natural gas or liquefied petroleum gas, is planned. Significant results have been achieved in the production of high quality gasoline from natural gas, improvements to the transport infrastructure, support for the development of public transport, optimization of traffic flows to prevent congestion, development of transport infrastructure including new interchanges, studies on the needs and opportunities for multi-story traffic, the renewal of the vehicle fleet, control over its timely repair and the expansion of mechanisms for regulating imports of motor vehicles with due regard for energy efficiency. Compliance of enterprises with the maximum permissible emissions standards, the toxicity of motor vehicle exhaust gases and the reliability of

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[146] Law of Turkmenistan "On Hydrocarbon Gas and Gas Supply" of 29 August 2013 (amended 8 June 2019, No. 153-VI). Statements of Mejlis of Turkmenistan. 2013. No. 3. Art. 54. https://policy.asiapacificenergy.org/sites/default/files/Law%20No.%20424-IV%20of%202013%20on%20Hydrocarbon%20Gas%20and%20Gas%20Supply%20%282019%20Ed.%29%28RU%29.pdf

[147] Law of Turkmenistan "On Electricity" of 16 August 2014, No. 104-V (amended 8 June 2019, No. 153-VI and 3 June 2023, No. 28-VII). Statements of Mejlis of Turkmenistan. 2014. No. 3. Art. 104. https://minjust.gov.tm/assets/files/law_documents/hukuknama_504_ru.pdf

[148] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan dated 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

data of legal entities and individuals on production reporting on emissions are strictly controlled.

The legal basis for mitigating climate change impacts in the transport sector is provided by the laws **"On Transport Security"**,[149] **"On the Fundamentals of Transport Policy of Turkmenistan"**,[150] **"On Main Pipeline Transport"**[151] and others. One of the main objectives of Turkmenistan's transport policy is to ensure compliance with safety and environmental standards in the transport system and to implement measures to minimize and eliminate the harmful effects of transport vehicles on the environment and on human life and health. The main directions of the state policy in the area of transport are to ensure environmental protection and the ecological safety of transport and to ensure the energy efficiency of the transport system.

Another important aspect of effective emission control is related to measures to improve the quality of GHG sinks and accumulators. In this regard, measures to increase the absorption of carbon dioxide from the atmosphere in forest ecosystems are important. These measures can be achieved by developing forestry and increasing the area of forests. In Turkmenistan, forests occupy about 4.3 million hectares of territory, most of which are desert forests.[152]

The legal framework for mitigating climate change impacts is the **Forest Code of Turkmenistan**, which provides a set of measures for the protection, conservation, reproduction and afforestation of forests.[153] At the same time, it should be noted that the forests of Turkmenistan do not have a great potential as GHG sinks, accounting for a very small part of carbon dioxide absorption from the atmosphere. This is due to their specificity, more than 90% of which is accounted for by rare desert forests of *saxaul* and other species with a limited potential for the absorption of carbon from the atmosphere. This fact is also taken into account in the Forest Code of Turkmenistan, which defines "forest" as "a set of interrelated and interacting

[149] Law of Turkmenistan "On Transport Security" of 5 January 2018. Statements of Mejlis of Turkmenistan. 2018. No. 1. Art. 1

[150] Law of Turkmenistan "On the Fundamentals of the Transport Policy of Turkmenistan" of 9 June 2018. https://minjust.gov.tm/assets/files/law_documents/hukuknama_242_ru.pdf

[151] Law of Turkmenistan "On Main Pipeline Transport" of 4 May 2013 (amended 8 June 2019, No. 153-VI). Statements of Mejlis of Turkmenistan. 2013. No. 2. Art. 24. https://minjust.gov.tm/assets/files/law_documents/hukuknama_193_ru.pdf

[152] National Forest Program of Turkmenistan 2021-2025. Approved by the Decree of the President of Turkmenistan dated 25 June 2021. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2021. No. 6. Art. 1935.

[153] Forest Code of Turkmenistan. The Law of Turkmenistan "On Approval and Enactment of the Forest Code of Turkmenistan" of 25 March 2011 (amended and expanded 28 February 2015). https://minjust.gov.tm/assets/files/law_documents/hukuknama_212_ru.pdf

components of biological diversity and natural environment dominated by tree and shrub vegetation, with a minimum area of 0.5 hectares, a minimum width of 3 meters and a projective cover of at least 10% of the area". Such minimum forest characteristics are due to natural and climatic conditions, as well as the peculiarities of desert forests, which engage most of the territory of the country's forest fund.[154] In this regard, it should be noted that in the context of measures to combat negative climatic manifestations, forests in Turkmenistan have a greater potential for adaptation to climate change. It is not by chance that the TNSCC includes forestry measures in the section on adaptation to climate change. In this case, the measures on adaptation to climate change include creation of new forest areas, the improvement of the forest inventory system, the expansion of reforestation works, the implementation of forest inventory and the development and implementation of forest monitoring systems. The measures on adaptation to climate change include the creation of new forest areas, the improvement of the forest accounting system, the expansion of reforestation works, the implementation of a forest inventory and the development and implementation of a forest monitoring system. Thus, the role of forests in Turkmenistan's climate change mitigation in the context of GHG uptake has a very limited impact potential.

The Decree of the President of Turkmenistan of 14 May 2009 on measures to introduce environmental and energy-saving technologies in accordance with the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol plays an important role in mitigating climate change impacts. It is aimed at increasing the potential and the development of economic sectors and their sustainability in the context of climate change by introducing advanced technologies and foreign investments through the implementation of environmental and energy savings projects. To this end, an interstate Working Group on the Clean Development Mechanism of the Kyoto Protocol (CDM) to the UNFCCC has been established. The main tasks of the Working Group are to define priorities for the use of CDM, prepare proposals for the implementation of CDM projects, coordinate the activities of government agencies implementing projects in accordance with international treaties and legislation of Turkmenistan, as well as international and

[154] Кепбанов Ё.А. Особенности правового регулирования и управления лесами в Туркменистане. Legal Aspects of European Forest Sustainable Development. Proceedings of the 14th International Symposium Minsk, Republic of Belarus 19-21 September 2012. Minsk, IUFRO, 2012; Кепбанов Ё.А., Баллыев Б.Б. Организация управления природоохранной деятельностью в Туркменистане (экологическая политика, национальная и международная правовая база, институциональный механизм). Отв. ред. академик, профессор Н.Р. Корпеев и канд. биол. наук М.Х. Дуриков. – Ашхабад, 2018. С. 198.

national interests for sustainable development, and ensure the monitoring of the implementation of CDM projects.[155]

5.2 Climate Change Adaptation Policies and Legislation

5.2.1 General characterization of adaptation to climate change

The Commentary to the Paris Agreement, issued in 2021, notes that neither the UNFCCC nor the Paris Climate Agreement defines adaptation to climate change. However, the content and core elements of adaptation are set out in Article 7 of the Paris Agreement and shed light on what an agreed definition among the 196 negotiating states could be.[156]

The Glossary (Annex II) of the IPCC Fifth Assessment Report defines adaptation as "the process of adjusting to existing or expected climate and its impacts. In anthropogenic systems, the goal of adaptation is to reduce or avoid damage, or to take advantage of favorable opportunities."[157] The UN Climate Change website provides a more expansive definition, in which "Adaptation to climate change refers to the adjustment of natural, social or economic systems in response to actual or expected climate change and its impacts. It refers to adjustments in processes, actions or structures undertaken to reduce potential risks or take advantage of favourable opportunities associated with climate change. In other words, states and communities need to develop and put into practice adaptation measures to respond to existing climate change and prepare for its expected impacts."[158] There are a

155 Presidential Decree of 14 May 2009, No. 10429. On measures to introduce environmental and energy-saving technologies in accordance with the UN Framework Convention on Climate Change and the Kyoto Protocol. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2009. No. 5. Art. 279.

156 Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

157 МГЭИК, 2014 г.: Приложение II: Глоссарий [Мэк, К. Дж., С. Плантон и К. фон Штехов (редакторы)]. В: Изменение климата, 2014 г.: Обобщающий доклад. Вклад Рабочих групп I, II и III в Пятый оценочный доклад Межправительственной группы экспертов по изменению климата [Основная группа авторов: Р. К. Пачаури и Л. А. Мейер (редакторы)]. МГЭИК, Женева, Швейцария. С. 133-148.

158 What is adaptation and climate resilience? https://unfccc.int/ru/temy/adaptaciya-i-soprotivlyaemost-k-izmeneniyu-klimata/the-big-picture/chto-oznachayut-adaptaciya-i-klimaticheskaya-ustoychivost

number of other definitions of "adaptation to climate change", which all converge on the common understanding that it is the process of adjusting to the existing or expected climate and its impacts.

Parties to the UNFCCC and the Paris Agreement recognize that adaptation is a global challenge affecting people at local, subnational, national, regional and international levels. Adaptation is a key component of a long-term global response to climate change to protect people, livelihoods and ecosystems. Parties agree that adaptation efforts should be based on national initiatives, broad participation and a fully transparent approach, that it should take into account the interests of vulnerable groups, communities and ecosystems, be gender-sensitive, be based on and guided by the best available scientific knowledge and, as appropriate, traditional, indigenous and local knowledge systems, in order to integrate adaptation into the relevant socio-economic and environmental policies and measures.[159]

The UNFCCC outlines only formal approaches to adaptation. It is no coincidence, in this regard, that most researchers covering the provisions of the Convention note that the phrase "naturally adapt" in Article 2 is one of the few references to adaptation. The Convention's primary concern is mitigation; adaptation is considered by many to be a "poor relative".[160] In fact, only Article 4 deals with adaptation in any detail. On the other hand, the numerous references to the "impacts" and "adverse effects" of climate change demonstrate an implicit agenda to address such impacts through adaptation.[161]

The text of the UNFCCC is silent on the content and specificity of adaptation, and places great emphasis on the consideration of a mitigation framework. It recognizes the vulnerability of all states to climate change and calls for adaptation measures, in the sense of the adaptability of natural or human-made systems in response to actual or expected climate change. However, in the first period after the Convention entered into force, less attention was paid to climate change adaptation than to climate change mitigation. Since the release of the IPCC Third Assessment Report, the focus on adaptation has increased and the parties have agreed to initiate

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159 Ibid.

160 David Freestone, The International Legal Framework for Adaptation' Chapter 17 in Michael Gerard and Katrina F. Kuh (eds.), Law of Adaptation to Climate Change: US and International Aspects. American Bar Association Press, 2012.

161 Philippe Sands and Jacqueline Peel, with Adriana Fabra and Ruth MacKenzie, Principles of International Environmental Law, 2nd ed., 2003, p. 261. https://assets.cambridge.org/97811084/20952/frontmatter/9781108420952_frontmatter.pdf

a process to address climate change and to establish modalities for financing adaptation.[162]

The Paris Climate Agreement has a strong focus on adaptation. In her commentary on Article 7 of the Paris Agreement, Kathrin Ramstad Wenger notes that "for a variety of reasons, adaptation as an international legal phenomenon has been poorly understood and usually overshadowed by its big brother, mitigation. Nevertheless, the Paris Agreement made great strides in placing adaptation (including loss and damage) on the international legal and policy agenda. This has resulted in a comprehensive article that establishes a global goal for adaptation, specifies its core principles and elements, ensures that adaptation is firmly anchored in national frameworks, while at the same time setting out a framework for enhancing international cooperation and requiring developed and other States to provide means for supporting developing States, in particular the least developed and most vulnerable countries, in the planning and implementation of adaptation efforts.[163] She continues, "The Adaptation Article has elevated a previously neglected area to the status of an internationally binding agreement, placing it in a position where it has received a level of attention and recognition unimaginable until recently. Despite the legal shortcomings of the global adaptation goal and uncertainty about how global adaptation outcomes will evolve, the Adaptation Article sheds light on its potential to strengthen both national and intentional aspects of adaptation."[164]

Indeed, Article 7 of the Paris Agreement contains an important body of information related to adaptation, defining the concept and objectives. Adaptation is a global challenge faced by all in local, subnational, regional and international dimensions; it is a key component of, and contributor to, a long-term global response to climate change to protect people, livelihoods and ecosystems, taking into account the urgent and immediate needs of those developing-country parties that are particularly vulnerable to the adverse effects of climate change (Article 7, p. 2). It also states that adaptation action should be country-driven, gender-sensitive, participatory and fully transparent, taking into account vulnerable groups, communities and ecosystems, and should be based on and guided by the best available scientific knowledge and, as appropriate, traditional knowledge, indigenous

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[162] What is the United Nations Framework Convention on Climate Change? https://unfccc.int/ru/peregovornyy-process-i-vstrechi/chto-takoe-ramochnaya-konvenciya-organizacii-obedinennykh-naciy-ob-izmenenii-klimata

[163] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST: UKAZ&lang=en&adaptor=Local%20Search%20Engine

[164] Ibid.

knowledge and local knowledge systems, with a view to integrating adaptation actions, as appropriate, into relevant socio-economic and environmental strategies; and, where appropriate, to integrating adaptation actions into relevant social, economic and environmental policies and programs.(Art.7, p.5) Further, the various measures include monitoring and evaluating adaptation plans, policies, programs and actions for building the resilience of socio-economic and ecological systems, including through economic diversification and the sustainable management of natural resources (Art. 7, p. 8).

5.2.2 Turkmenistan's climate change adaptation activities

Turkmenistan pays special attention to climate change adaptation measures. Given the high degree of vulnerability of the country's economy to the effects of an already changing climate, an adaptation strategy is very timely. As part of the preparation of Turkmenistan's Third NS under the UNFCCC (2012-2015), an assessment of the risks from climate change in Turkmenistan for the period from 1950 to 2010 was conducted, which describes Turkmenistan's high vulnerability to climate change. This vulnerability is largely related to the increase, recurrence and intensity of extreme hydrometeorological events such as drought, hail, storm winds, frosts, heat waves, floods and debris flows.

Adaptation measures are part of a set of preparatory and response measures to combat the negative impacts associated with climate change. In Turkmenistan, the priority sectors for adaptation to climate change are public health, agriculture and water management, land resources and natural ecosystems, including flora and fauna, forestry, land resources and hydrometeorological phenomena. Adaptation options are available in all sectors of socio-economic development of the country.

Turkmenistan is currently implementing national projects that directly or indirectly contribute to the adaptation of the country's economy to climate change. Such projects include the ongoing construction of the Turkmen Golden Age Lake in the Karakum Desert and the National Forest Program on the greening of cities and settlements of the country. The value of climate change adaptation issues is reflected in measures that are being implemented to improve the quality of land resources, the rational use of water resources, the introduction of less water-loving crops into agricultural production, the careful preservation of biological diversity and the solution to the Aral Sea’s desiccation problems.

Adaptation measures aim to reduce the impacts of climate change and capitalize on its potential benefits. Early action can bring notable economic benefits and minimize threats to ecosystems, human health, economic development, property and infrastructure. At the same time, assuming that timely adaptation measures are not taken, the lost output could reach 20% by 2030, and the loss in value of crop production over the 15-year period from 2016 to 2030 alone would amount to 58,777 billion manats (USD 20.5 billion). Warning about these losses, adaptation measures have been prepared to prevent the consequences in priority industries (sectors) of the economy. According to preliminary estimates, the cost of implementing the planned adaptation measures will amount to USD 10.5 billion.[165]

Currently, long-term adaptation planning measures are being taken to reduce climate risks in vulnerable sectors. Adaptation measures should be reflected in long-term national strategies, NAPs and country development programs based on scenario planning methods. In this regard, the preparation of national, regional and sectoral adaptation plans will be organized in the near future.

Also, with the support of the World Health Organization (WHO) Regional Office for Europe and the WHO Country Office, the development of a National Plan on the Adaptation of Public Health to Climate Change has been initiated with the aim of reducing vulnerability and strengthening adaptation measures to reduce the adverse impacts of climate change on human health in Turkmenistan.[166]

Since the adoption of the TNSCC in 2012, significant progress has been made in integrating adaptation; however, improvements in the legal and institutional framework are now required to ensure that adaptation is systematically integrated into sectoral plans. The development of a NAP can offer a framework for integrating adaptation across sectors.[167]

In order to create a legal basis for NAPs, sectoral and regional adaptation plans, it is important to develop special methodological guidelines regulating the process and requirements for the preparation of these planning documents.

5.2.3 Policy instruments for climate change adaptation

Given the high degree of vulnerability of the country's economy to the effects of an already changing climate, it is very timely to develop strategies and programs that include climate change adaptation measures. From this perspective, Turkmenistan has initiated the development of several policy documents aimed at improving

[165] Intended nationally determined contribution of Turkmenistan in accordance with decision 1/CP. 20 UNFCCC. https://unfccc.int/sites/default/files/NDC/2022-06/INDC_Turkmenistan.pdf

[166] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan dated 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[167] Institutional Analysis of the Current National System and Processes Related to Climate Change in Turkmenistan. 2021. https://napglobalnetwork.org/resource/institutional-analysis-turkmenistan/

national agricultural and forestry management practices, promoting socio-economic reforms and improving policies related to the monitoring and management of hydrometeorological services. So far, the recent policy measures in Turkmenistan have formed a suitable basis for prioritizing support for adaptation and sustainable development to climate change. The implementation of adaptation measures entails the more rational use of water and land resources, preservation of biodiversity and increased efficiency of agriculture and other sectors of the economy.

Adaptation to climate change is a major focus of the TNSCC and part of the NDC.

Turkmenistan's National Climate Change Strategy (2019) occupies an important place in the hierarchy of documents defining climate change adaptation measures. It provides a policy framework for building resilience to climate change, primarily through the identification of priority adaptation measures in Turkmenistan. The National Strategy prioritizes specific sectoral priorities to ensure climate change adaptation measures for key sectors. For each of the priority sectors, the TNSCC proposes a list of adaptation measures to mitigate climate impacts.[168] The TNSCC has a special section on "Climate Change Adaptation Measures", which discusses adaptation options across all sectors of socio-economic development, the specifics of their implementation and their potential to reduce climate risks. It is noted that some adaptation measures involve significant co-benefits, synergies and trade-offs. To reduce climate risks in vulnerable sectors, actions should be planned on a long-term basis. Adaptation measures should be reflected in long-term national strategies, NAPs and country development programs, based on scenario planning methods. In this context, regional, sectoral and departmental adaptation plans should be prepared.[169]

The Nationally Determined Contribution under the Paris Agreement (2022) includes an Adaptation Contribution with a list of adaptation measures presented in a table and an Implementation Plan for the Paris Climate Agreement in Turkmenistan. The Adaptation Contribution has been prepared in accordance with the TNSCC and includes the rationale, objectives, commitments, specific measures and responsible organizations, as well as the status of implementation and timelines of activities. At the same time, all climate change activities, including adaptation measures for sectoral agencies, contained in the National Strategy will be

[168] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan from 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[169] Ibid.

mandatorily implemented in accordance with the timeframes specified in the Plan for the Implementation of the Paris Climate Agreement in Turkmenistan.[170]

Turkmenistan's National Communications under the UNFCCC are a source of official information on climate change and ongoing adaptation measures, and reflect the main needs of different sectors.

Turkmenistan is currently successfully implementing national projects that provide for measures to adapt the country's economy to climate change. They are reflected in the national, sectoral and regional strategies, programs and development plans.

The National Program of Socio-Economic Development of Turkmenistan for 2011-2030[171] and the National Program of Socio-Economic Development of Turkmenistan for 2022-2052[172] aim to achieve sustainable development and make consistent implementation of SDGs one of the main priorities. Since the official adoption of the 2030 Agenda by the Government of Turkmenistan, its sustainable development provisions have been integrated into the relevant national strategic programs and plans in Turkmenistan. They provide for adaptation measures for the sustainable development of the country and recognize the need to transition to a green economy as a national priority. They also provide for measures to ensure environmental security and improve the system of environmental protection and rational use of natural resources.

These activities for the relevant period are reflected in the country's socio-economic development programs for 2019-2025, 2022-2028 and further in sectoral and regional programs and plans.

The President's Program of Turkmenistan's Socio-economic Development for 2019-2025 provides for a comprehensive approach to sustainable development by directing a cross-sectoral approach in socio-economic policy, preventing the impact of climate change, protecting the environment and biodiversity and other institutional reforms. An important role is assigned to enacting a balanced macroeconomic policy and maintaining high investment activity, especially in

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[170] Nationally Determined Contribution under the Paris Agreement. Ashgabat, 2022. https://unfccc.int/sites/default/files/NDC/2023-01/NDC_Turkmenistan_12-05-2022_approv.%20by%20Decree_Rus.pdf

[171] National Program of Socio-Economic Development of Turkmenistan for 2011-2030. Approved by the Decree of the President of Turkmenistan of 14 May 2010, No. 11061. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2010. No. 5. Art. 865.

[172] National Program of Socio-Economic Development of Turkmenistan for 2022-2052. Approved by the Decree of the President of Turkmenistan of 11 February 2022 No. 2601. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2022. No. 2. Art. 2149.

human capital and in the implementation of the state's social commitments. This includes deepening and accelerating structural reforms for a more diversified market economy, creating new jobs, stimulating the development of small and medium-sized enterprises and expanding employment in the private sector.

Sectoral development plans and programs include:

State Program for the Development of Agriculture of Turkmenistan for the period 2019-2025. Turkmenistan's agriculture is the main sector ensuring the food security of the country and a significant supplier of raw materials for the processing industry. As agriculture is heavily dependent on irrigation (about 1.7 million hectares of irrigated land), rising temperatures, decreased precipitation and the reduction of surface water are likely to increase aridity and accelerate desertification. Therefore, given the importance of irrigation for agricultural production, without adaptation measures, climate change is likely to negatively affect agricultural production and have a significant impact on the socio-economic development of the country. In this regard, the Program attaches great importance to food security and the sustainability of agricultural production, especially cotton and wheat. The Program is aimed at improving the sustainability of agricultural production, and attracts significant state resources for the purchase of modern agricultural machinery. Of the total number of planned activities in the Program, an important place is given to environmental issues. These include environmental protection and ensuring the environmental safety of industrial production, as well as the development of the system of specially protected natural territories (SPNT)s and biodiversity conservation, environmental protection of the Turkmen sector of the Caspian Sea, implementation of the TNSCC, implementation of the National Forest Program, implementation of Turkmenistan's international environmental cooperation, research and practical activities in the area of nature protection.

The President's State Program "Health" until 2025 is closely linked to the implementation of the state's social policy, including environmental protection issues, taking into account climate change. The health care system is the most vulnerable to climate change. In general, human health in the country is expected to be affected by the number and magnitude of extreme weather events, air pollution, water shortages and rising temperatures. Among the main factors behind deteriorating health are expected to be the increasing threat of heat stroke and cardiovascular and respiratory diseases. With this in mind, the program aims to improve the health and well-being of the population, increase life expectancy, ensure comprehensive equal opportunities and conditions for the health of citizens and develop health care in accordance with international standards.[173] In addition, Turkmenistan has developed and is implementing the **National Action Plan on Adaptation of Public Health to Climate Change and its Adverse Impacts for 2020-2025**, which aims to reduce vulnerability and strengthen adaptation measures to reduce the adverse impacts of climate change on human health in the country.

National Forest Program of Turkmenistan for 2021-2025.[174] In terms of adaptation to climate change, forests in Turkmenistan play a huge role in ensuring the sustainability of agricultural production, preserving and enhancing biodiversity, preventing desertification and adapting ecological systems to climate change. In this regard, the National Forest Program should be considered an important part of the state strategy for environmental protection and adaptation to climate change. Under the program, it is planned to develop and implement projects for the restoration and establishment of forests, taking into account the soil and climatic conditions and the peculiarities of the various regions of the country. Priority measures for adaptation to climate change include measures for restoration, continuous reproduction, rational utilization of forest resources and the introduction of modern forestry methods.

The main directions of forestry development are continuous afforestation of the areas being dried out by the Aral Sea, the areas around the Turkmen lake Altyn Asyr and the objects under construction in the Karakum desert, as well as the creation of a system of forest protection strips and green plantations around agricultural lands and cities and other settlements, respectively.

The creation of forest protection strips in the Turkmen Aral Sea region on the territory of 20,000 hectares of sown fields in Dashoguz and Lebap provinces by planting various types of forest plantations is an important adaptation measure. It is planned to plant desert plants resistant to saline soils, such as saxaul, saltwort and kandym as phytomeliorants on sandy and clay plains. Artificial forests will significantly reduce the harmful effects of salt dust and strong winds from the Aral Sea floodplains, prevent soil salinization and desertification and improve pasture lands. The program also envisages research work on the further development of genetics, breeding and seed production in forestry, leading to the cultivation of plants adapted to the climatic conditions of Turkmenistan.

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[173] State Program of the President of Turkmenistan "Health". Approved by the Decree of the President of Turkmenistan of 26 March 2021, No. 2195. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2021. No. 3. Art. 1875.

[174] National Forest Program of Turkmenistan 2021-2025. Approved by the Decree of the President of Turkmenistan of 25 June 2021. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2021. No. 6. Art. 1935.

For the first time, the Program includes measures to conserve biodiversity, protect and reproduce flora and fauna, improve the management system of specially protected natural areas and expand the scope of work to protect natural ecosystems.

Figure 7: Artificial forest plantations in the Kopetdag Foothills near Ashgabat.

The National Aral Program of Turkmenistan for 2021-2025 aims to improve the environmental and socio-economic situation and minimize the consequences of the Aral disaster in Turkmenistan. In order to increase stability in all spheres of life, the Program defines the main activities to be carried out at the national level. These include improving the socio-economic and environmental situation in the region and, accordingly, creating favorable conditions for the population, developing agriculture in the region, improving the management and use of water resources, reforestation, afforestation and preserving biodiversity.[175]

[175] National Aral Program of Turkmenistan for 2021-2025. Approved by the Decree of the President of Turkmenistan of 22 October 2021. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2021. No. 10. Art. 2086.

Figure 8: Afforestation of desert pastures Source: Sustainable land management (Analysis of the state and prospects of development. Ashgabat. 2011).

The Concept for the development of the Altyn Asyr Lake region for 2019-2025 provides for the construction of Turkmenistan's Altyn Asyr Lake, which is a major environmental project in the Karakum Desert. Its implementation makes it possible to rationally use collector-drainage water for the needs of the national economy, improve water quality in the lower reaches of the Amu Darya and return more than 400,000 hectares of pasture land to agricultural use. Its construction will favorably affect, above all, the enrichment of the flora and fauna of the Karakum desert, as well as the ecological condition of the whole region.[176]

[176] Concept for the development of the region of the lake Altyn Asyr for 2019-2025. Approved by the Decree of the President of Turkmenistan of 19 April 2019, No. 1207. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 4. Art. 1122.

Figure 9: Turkmen lake Altyn Asyr in the Karakum desert

Turkmenistan is also implementing adaptation measures in the regional context. Currently, the main platform for regional cooperation and the coordination of climate change policies in Central Asia is IFAS. Within the framework of Turkmenistan's cooperation with IFAS, climate change adaptation measures are envisaged under the **Aral Sea Assistance Program 4**.

The Regional Environmental Protection Program for Sustainable Development of Central Asia (REPSDCA), adopted on 24 October 2019, is also extremely important. The REPSDCA is a strategic document of a framework nature, defining the priority directions of regional cooperation on environmental protection until 2030, and is designed to coordinate the regional program with the priority directions of national strategies and state programs for environmental protection in order to achieve environmental sustainability. In particular, in accordance with SDG 13, "Taking urgent measures to combat climate change and its consequences", the REPSDCA envisages the development of a Regional Climate Change Adaptation Strategy, taking into account the vulnerability of Central Asian ecosystems and the mitigation of climate risks, the preparation and implementation of regional programs and projects financed by the GEF, GCF and other donors, the consideration of climate risks, vulnerability and regional climate scenarios using appropriate models of climate change impact on water resources and the development of a Regional Climate Change Adaptation Strategy.[177]

5.2.4 Climate change adaptation legislation

Climate change adaptation measures are mostly reflected in environmental legislation, which stipulates requirements for the protection, rational use and reproduction of natural resources. These include:

The Code "On Land" (**2004**), which stipulates requirements for the protection of lands aimed at ensuring the purposeful and rational use of land, the prevention of unjustified withdrawal of lands used in agriculture, their protection from anthropogenic impact and the reproduction and improvement of soil fertility. The responsibilities of land users include the restoration and improvement of soil fertility and other properties of land, as well as the protection of lands from water and wind erosion, desertification, mudflows, waterlogging, secondary salinization, desiccation, compaction, pollution by waste, chemical and radioactive substances and other destructive processes.[178] Thus, a characteristic feature of the Code is the presence of norms on environmental requirements for land use, which indicates their adaptive nature.

The Water Code (**2016**) regulates water use and protection and is aimed at increasing the importance of water resources in the context of climate change. The Code enshrines the basin principle of water resources management and the establishment of basin state water management organizations and basin councils. Legal entities and individuals are obliged to comply with the environmental requirements established by the legislation on environmental protection and to carry out organizational, technological, reclamation, forestry, agrotechnical, hydraulic, sanitary-epidemiological and other measures to ensure the protection of water bodies.[179]

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[177] Regional Environmental Protection Program for Sustainable Development of Central Asia (REPSD CA) dated 24 October 2019.

[178] Land Code of Turkmenistan. Approved by the Law of Turkmenistan "On Approval and Enactment of the Code of Turkmenistan "On Land" of 25 October 2004 No. 243-P. Statements of Mejlis of Turkmenistan. 2004. No. 4. Art. 33. https://minjust.gov.tm/assets/files/law_documents/hukuknama_540_ru.pdf

[179] Water Code of Turkmenistan. Approved by the Law of Turkmenistan "On Approval and Enactment of the Water Code of Turkmenistan" of 15 October 2016, No. 456-V. Statements of

The Law "On Specially Protected Natural Territories" (2012) regulates the protection and use of SPNTs; it establishes the principle of "sustainable use of SPNTs" – one of the most important components of the ecosystem approach in the use of natural resources. The Law reflects the elements of the ecological network: land plots for health-improving and recreational purposes, protected areas of SPNT, ecological corridors, forest fund and hunting grounds and ensuring the sustainability of natural and cultural landscapes.[180]

The Law "On Plant Life" (2012) recognizes the priority of protection, rational use and reproduction of plant life objects, as well as the scientifically based use and reproduction of plant life. The protection of plant objects includes a system of legal, organizational, economic and other measures aimed at the rational use, reproduction, increase of productivity and sustainability of plant life.[181]

The Law "On Wildlife" (2013) aims to ensure the conservation of wildlife in natural habitat conditions. The Law recognizes sustainable use of wildlife as one of the main principles in the protection, reproduction and use of wildlife. The protection of fauna is provided on the basis of preserving the integrity of natural communities of wild animals, the preservation of their species diversity in a state of natural freedom, the establishment of restrictions and prohibitions on the use of fauna objects and implementation of other measures for the protection of fauna.[182]

The Forest Code (2011) regulates relations related to the protection, defense, use and reproduction of forests. Given the specificity of Turkmenistan's forests (mainly desert forests), they have more adaptive potential than the property of absorbing carbon from the atmosphere. Taking into account the arid climatic conditions of Turkmenistan, the Forest Code defines specific features of forests, the main purpose of which is to fulfil environment-forming, water protection, soil protection and other functions. The Code devotes a great deal of attention to the reproduction of forests, which is ensured through reforestation, improvement of the species composition of forests and rational use of forest lands. Natural regeneration is not sufficient for forest

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Mejlis of Turkmenistan. 2016. No. 4. Art. 139. https://minjust.gov.tm/assets/files/law_documents/hukuknama_527_ru.pdf

[180] Law of Turkmenistan "On Specially Protected Natural Areas" of 31 March 2012, No. 286-IV (amended 1 March 2014, No. 43-V, 16 August 2014, No. 114-V, 3 June 2017, No. 578-V and 3 June 2023, No. 28-VII). Statements of Mejlis of Turkmenistan. 2012. No. 1. Art. 37. https://minjust.gov.tm/assets/files/law_documents/hukuknama_512_ru.pdf

[181] Law of Turkmenistan "On Vegetation" of 4 August 2012 (amended 3 June 2017, No. 578-V). Statements of Mejlis of Turkmenistan. 2012. No. 3. Art. 60. https://minjust.gov.tm/assets/files/law_documents/hukuknama_363_ru.pdf

[182] Law of Turkmenistan "On Wildlife" of 2 March 2013, No. 375-IV (amended 3 June 2017 No. 578-V). Statements of Mejlis of Turkmenistan. 2013. No. 1. Art. 4. https://minjust.gov.tm/assets/files/law_documents/hukuknama_353_ru.pdf

reproduction; therefore, for the conditions of Turkmenistan, afforestation, which is a forestry measure in which forest plantations are artificially grown, is of great importance.[183]

The Law "On Environmental Information" (2020) defines the legal, organizational, economic and social basis for ensuring access to environmental information and is aimed at ensuring the rights of legal entities and individuals to receive complete, reliable and timely information on the state of the environment and natural resources. It integrates the provisions of the Aarhus Convention on Access to Environmental Information: collection, storage, transmission, dissemination and access to environmental information. It provides for a broad approach to the definition of entities obliged to provide environmental information upon public requests. The main holder of environmental information is the Ministry of Environmental Protection of Turkmenistan (MEPT), which is charged with carrying out activities on collection, storage, analysis, provision and dissemination of environmental information.[184]

The Law "On State Regulation of Agricultural Development" (2018) enshrines the rational use of land, water and other natural resources for the needs of agricultural production. The principles pertaining to agricultural development include the accessibility of state support for agricultural producers, openness of information about state agrarian policy, the use of economic incentives to promote stable and rational use of land and water resources and participation of agricultural producers in the improvement and implementation of the state agrarian policy.[185]

Adaptation legislation also includes the laws "On Drinking Water" (2010), "On Fishing and Conservation of Aquatic Biological Resources" (2011), *"On* Pastures" (2015), "On Land Reclamation" (2018), "On State Land Cadaster" (2021) and others.

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[183] Forest Code of Turkmenistan. Approved by Law of Turkmenistan of 25 March 2011. NO. 166-IV "On Approval and Enactment of the Forest Code of Turkmenistan" Statements of Mejlis of Turkmenistan. 2011. No. 1. Art. 10. https://minjust.gov.tm/assets/files/law_documents/hukuknama_212_ru.pdf

[184] Law of Turkmenistan "On Environmental Information" of 14 March 2020, No. 227-VI. Statements of Mejlis of Turkmenistan. 2020. No. 1. Art. 3. https://minjust.gov.tm/assets/files/law_documents/hukuknama_16_ru.pdf

[185] Law of Turkmenistan "On State Regulation of Agricultural Development" of 9 June 2018, No. 29-VI. (amended 2 March 2019, No. 131-VI). Statements of Mejlis of Turkmenistan. 2018. No. 2. Art. 31. https://minjust.gov.tm/assets/files/law_documents/hukuknama_243_ru.pdf

5.3 Disaster Risk Management Policy and Legislation

5.3.1 General characterization of disaster risk management

Disaster risk management is the application of DRR policies to prevent new disaster risks, reduce existing disaster risks and manage residual risk, which contributes to the building of resilience and reducing disaster losses. An overall strategy for DRR should establish the content and criteria for DRM and characterize the potential threats to the local community and its environment (hazards). It should also analyze social and physical vulnerability and identify the potential risks of several hazard scenarios in order to implement mitigation measures. Thus, DRR requires a thorough understanding of the root causes and underlying factors that lead to disasters in order to find appropriate practical sustainable solutions for the community at risk.[186]

The number of natural disasters is directly linked to climate stability. As shown in the recently published Report of Working Group II of the IPCC Sixth Assessment Report on the impacts of climate change, such impacts are already well visible. We have seen an increase in the frequency, duration and severity of weather events.[187] According to the Atlas of Mortality and Economic Losses from Extreme Meteorological, Climatic and Hydrological Events (1970-2019), published by WMO, there has been a dramatic increase in economic losses due to weather-related disasters in the last 50 years.[188] Nearly half of the world's population lives in regions that are highly vulnerable to climate change. In the last decade, deaths from floods, droughts and storms were 15 times higher in highly vulnerable regions.[189]

Article 8 of the Paris Agreement includes provisions recognizing the importance of preventing, minimizing and addressing loss and damage associated with the adverse impacts of climate change, including extreme weather events and slow onset

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[186] «ИКТ в целях управления рисками возникновения бедствий». Справочный материал. Asian and Pacific Training Centre for Information and Communication Technology for Development ESCAP/APCIT: https://www.unapcict.org/sites/default/files/2020-12/Briefing%20note%20ICT%20for%20DRM%20_Russian.pdf

[187] Climate Change 2022: Impacts, Adaptation and Vulnerability. https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/

[188] Атлас смертности и экономических потерь в результате экстремальных метеорологических, климатических и гидрологических явлений (1970—2019 гг.) (ВМО- No. 1267). https://library.wmo.int/index.php?lvl=notice_display&id=22005#.Yk1cm8hByUk

[189] МГИЭК. Срочные меры по борьбе с изменением климата могут обеспечить пригодное для жизни будущее для всех. ИНТЕРЛАКЕН, Швейцария, 20 марта 2023 г. Пресс релиз по ОД 6 (Обобщающий Доклад). https://www.ipcc.ch/report/ar6/syr/downloads/press/IPCC_AR6_SYR_Press Release_ru.pdf

events, and the role of sustainable development in reducing the risk of loss and damage. In this context, the Article (part 4) identifies a framework of possible actions, namely the inclusion of (a) early warning systems, (b) emergency preparedness, (c) slow onset events, (d) events that may result in irreversible and permanent loss and damage, (e) integrated risk assessment and management, (f) risk insurance facilities, climate risk pools and other insurance solutions, (g) non-economic losses and (h) community resilience, livelihoods and ecosystems.[190] These formulations mean that the international mechanism developed at the Warsaw Climate Conference was recognized and supported in the Paris Agreement.[191]

5.3.2 Turkmenistan's disaster risk management activities

Global warming has also caused natural disasters and weather cataclysms in Turkmenistan. Due to climate change, the severity and frequency of natural extreme hydrometeorological phenomena have significantly increased. The territory of the country has become a zone of increased risk of floods, mudflows, strong winds, dust storms, droughts, frosts, heavy rains and other natural phenomena, which negatively affect the health of the population, the state of the economy and the natural environment. Moreover, the negative consequences caused by natural disasters are becoming more and more tangible and have already led to significant losses. Thus, according to studies on the territory of Central Asia in general, and in Turkmenistan in particular, further climate warming is expected, encompassing an increase in air temperature and a decrease in precipitation, as well as an increase in the number and strength of natural hydrometeorological phenomena.[192]

The increasing risk of dangerous and extreme hydrometeorological events and the increasing frequency of natural disasters necessitate urgent adaptation measures. Failure to do so could have a serious impact on the health and well-being of the population, and the country could face water scarcity, increased desertification and land degradation, as well as more droughts and natural hazards.

In Turkmenistan, the necessary measures are taken on an ongoing basis to reduce the risks of natural and man-made disasters and emergencies and to prevent them in a timely manner. Research is being conducted on the risks from such extreme

[190] Paris Climate Agreement. https://unfccc.int/resource/docs/2015/cop21/rus/l09r.pdf

[191] Дубовик О.Л., Аверина К.Н. Значение Парижского соглашения для охраны климата: крупномасштабные планы и проблемы с их реализацией Международное право и международные организации. 2018. No. 4. С. 18-27.

[192] Turkmenistan. Nationally Determined Contribution under the Paris Agreement. Ashgabat, 2022. https://unfccc.int/sites/default/files/NDC/2023-01/NDC_Turkmenistan_12-05-2022_approv.%20by%20Decree_Rus.pdf

hydrometeorological phenomena as drought, hail, storm winds, frosts, heat waves, floods and mudflows.

Turkmenistan participates in the Sendai Framework for Disaster Risk Reduction 2015-2030 adopted at the 3rd UN World Conference on Disaster Risk Reduction (2015, Sendai, Japan).[193] The Government of Turkmenistan and the UN signed a Memorandum of Understanding on Cooperation in the Coordination of Disaster Preparedness and Response (2019), which lays the legal basis for enhanced cooperation in disaster preparedness and response and implementation of the Sendai Framework and the Paris Agreement.[194]

In the regional context, Turkmenistan participates in the following interstate agreements over emergency prevention and response:

Protocol on Regional Preparedness, Response and Cooperation in the Event of Oil Pollution Incidents to the Framework Convention for the Protection of the Marine Environment of the Caspian Sea (Aktau, 12 August 2011). The focus of this Protocol is on regional preparedness, response and cooperation measures in the event of oil pollution in the Caspian Sea. In this context, the Protocol provides for the preparation of a Plan for Regional Co-operation on Oil Pollution Control in Cases of Emergency in the Caspian Sea. In addition, each party to the Protocol shall establish a national oil pollution rapid response system, develop and implement a national oil pollution incident preparedness and response contingency plan and develop exercise and training programs to enhance the state of preparedness of authorities responsible for oil pollution incidents.[195]

Agreement on Cooperation in the Field of Prevention and Elimination of Emergency Situations in the Caspian Sea (Astrakhan, 29 September 2014). The main purpose of the Agreement is to regulate interaction between the Caspian littoral states in case of natural and man-made emergencies on the Caspian Sea. The Agreement provides for cooperation of the Caspian littoral states on the creation and improvement of the system of interaction for emergency prevention and response, interaction in forecasting and monitoring of emergencies, information (notification) on the risks of emergencies, provision of assistance in emergency response, exchange of experience in the organization of preparation for actions in case of emergencies

[193] United Nations Office for Disaster Risk Reduction (UNDRR), Sendai Framework for Disaster Risk Reduction 2015-2030. https://www.undrr.org/about-undrr

[194] Government and UN sign Memorandum of Understanding on Emergency Preparedness. https://turkmenistan.un.org/ru/7385

[195] Protocol on Regional Preparedness, Response and Co-operation in the Event of Oil Pollution Incidents to the Framework Convention for the Protection of the Marine Environment of the Caspian Sea. Decision of the Mejlis of Turkmenistan of 22 December 2012, No. 370-IV on ratification. Statements of Mejlis of Turkmenistan. 2012. No. 4. Art. 121.

and other activities pertaining to emergency prevention and response as agreed by the parties.[196]

Agreement on Cooperation in the Field of Hydrometeorology of the Caspian Sea (Astrakhan, 29 September 2014). The objectives of the Agreement are to create and develop an integrated regional system for obtaining and exchanging information on the state of the Caspian Sea in the interests of ensuring the safety of life and sustainable development of economic activities at sea. The main activities of the parties within the framework of this Agreement are the formation of a database of observations of parameters relevant to the state of the Caspian Sea development of a unified geoinformation system displaying information on the state of the Caspian Sea and improvement of methods for forecasting the state of the Caspian Sea, including forecasting of sea level fluctuations of various advance dates, as well as assessment and integrated analysis of the elements of the Caspian Sea water balance.[197] These measures of the Caspian littoral countries are basically aimed at preventing emergencies in the Caspian Sea.

State action on DRM is expressed in national policies, programs and legislation aimed at prevention and DRR.

5.3.3 Policy instruments for disaster risk management

Regarding DRR, Turkmenistan has adopted the following national strategies and programs aimed at DRR.

Turkmenistan's National Strategy on Climate Change (2019) recognizes that due to climate change, the severity and frequency of natural extreme hydrometeorological events, which cause significant damage to the economy and environment, will increase. The need of the country's social and economic sectors for accurate hydrometeorological information is expected to increase. In this regard, the National Strategy draws attention to focusing greater efforts on work to reduce the risk of natural disasters. It is important to develop such activities as monitoring, forecasting and early warning of natural and man-made disasters, modernization of the hydrometeorological system and improvement of methods for forecasting natural hazards.

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196 Agreement on Cooperation in the Field of Prevention and Elimination of Emergency Situations in the Caspian Sea. Decision of the Mejlis of Turkmenistan of 8 November 2014, No. 155-V on ratification. Statements of Mejlis of Turkmenistan. 2014. No. 4. Art. 156.

197 Agreement on Cooperation in the Field of Hydrometeorology of the Caspian Sea. Resolution of the Mejlis of Turkmenistan of 24 October 2015, No. 300-V on ratification. Statements of Mejlis of Turkmenistan. 2015. No. 4. Art. 134.

In order to promptly provide industries with reliable information on the actual and expected climate and to further develop the potential of the hydrometeorological industry, the TNSCC envisages expansion of agrometeorological observations to take appropriate measures to protect agro-ecosystems from climatic factors, improve the system of climatic monitoring of hazardous weather events, establish a center for the monitoring, assessment and forecasting of climate change and natural hazards and improve short-term forecasting of climate change and natural hazards.[198]

The National Program and Action Plan for the implementation of the main provisions of the state policy in the field of civil defence and rescue operations for 2019-2030 is aimed at creating conditions for achieving a guaranteed level of safety of life activity of the population in emergencies and at ensuring the sustainable socio-economic development of the country. In this regard, the Program and Action Plan pay special attention to measures to reduce disaster risks, emergency preparedness and response, including creating a modern emergency medicine service, strengthening seismic safety and combating desertification. The main objectives of the Program are to improve the regulatory legal framework for civil protection, protect the population and territories from emergencies, improve the system of monitoring and forecasting of emergencies, improve the methods of protection of the population from emergencies and technologies of rescue operations (works), create conditions for improving the effectiveness of civil society institutions for the protection of the population and territories from emergencies and develop international cooperation for the same.[199]

Turkmenistan's National Oil Spill Prevention and Response Plan (2001). The main objective of the National Plan is to minimize the negative impact of oil spills on human health and living conditions, as well as on the environment, and to ensure the protection of fish stocks. Actions on oil spill prevention and response are planned in order to take measures in advance to prevent emergencies, maintain forces and means of their response in constant readiness to ensure the safety of the population and territories and reduce damage and losses to the maximum extent possible in case of their occurrence. The National Plan defines specific tasks and responsibilities of a

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[198] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[199] National Program and Action Plan for the implementation of the main provisions of the state policy in the field of civil defense and rescue operations for 2019-2030. Approved by the Decree of the President of Turkmenistan of 1 March 2019.

number of agencies and organizations involved in oil production activities, as well as their actions in the event of an emergency.[200]

National Caspian Action Plan of Turkmenistan (2012). The purpose of the National Caspian Action Plan of Turkmenistan (NCAPT) is to define the strategic direction of the planning and sustainable development of the Caspian region of Turkmenistan and ensure the implementation of measures to address a set of national and transboundary environmental problems of the Caspian Sea and its coast. One of the tasks of the NCAPT is to ensure the environmental safety of economic activities, including pollution control (including oil pollution) and emergency response. The document takes into account the potential risks associated with fluctuations in the level of the Caspian Sea, issues of emission reduction and biodiversity protection.[201]

5.3.4 Disaster Risk Management Legislation

In order to counteract natural disasters and DRR related to climate change, the following normative legal acts have been adopted and are functioning in the country:

Law "On Nature Protection" (2014). According to the Law, an environmental emergency situation (EES) is an unfavorable environmental situation that has arisen in a certain territory as a result of anthropogenic impact or natural phenomena, characterized by persistent negative changes in the environment, dangerous for life and health of the population and the conservation of biological diversity. Under the EES, on certain territories of Turkmenistan, certain types of economic activities and nature use may be prohibited or restricted.

The Law describes the zoning of EES and environmental disasters. The EES zones are declared areas of land, water and air space where, as a result of economic and other activities or the destructive impact of natural phenomena, there are persistent negative changes in the environment, threatening the health of the population and the state of ecological systems. These areas are declared as ecological disaster zones.

The financing of measures on the liquidation of EES and ecological disasters, as well as the rehabilitation of EES and ecological disaster zones, is made at the expense of the funds of enterprises, institutions and organizations through whose fault the

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[200] National Oil Spill Prevention and Response Plan of Turkmenistan. Approved by the Decree of the President of Turkmenistan of 21 August 2001. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2001. No. 8. Art. 406; The President of Turkmenistan approved the National Plan for Prevention and Elimination of Oil Spills. http://www.turkmenistan.ru/ru/node/13944

[201] National Caspian Action Plan of Turkmenistan. https://faolex.fao.org/docs/pdf/tuk198308.pdf

accident or catastrophe occurred, as well as targeted funds of the state budget and other sources.[202]

The Law "On Environmental Security" (**2017**) provides for the creation of a EE and an ecological disaster zone in case of emergency of a natural or man-made nature.[203]

The Water Code (**2016**) stipulates that one of its tasks is to protect the population, territory and economic objects from emergencies at hydraulic structures and the consequences caused by them.[204]

The Law "On civil defence" (**2003**) defines the basic tasks and organizational principles for the construction and functioning of civil defence, as well as the powers of the executive authorities, enterprises, institutions and organizations and the rights and obligations of Turkmen citizens, foreign citizens and stateless persons in the area of civil defence. The Act regulates the measures taken to protect the population, economic facilities and the country's territory from the impact of natural and man-made emergencies.[205]

The Law "National Red Crescent Society" (**2012**) establishes the legal basis for the activities of the National Red Crescent Society, as well as its principles, tasks, rights and duties. In accordance with the Act, the Society participates in providing assistance to victims of emergencies; to this end, it organizes the collection of charitable donations among the population and legal entities of Turkmenistan and, if necessary, establishes special services to provide assistance to refugees and various segments of the population.[206]

The Law "On Emergency Regime" (**2013**) defines the activities of state bodies and other organizations related to the introduction of the state of emergency regime. The law defines the objectives of the state of emergency regime as the elimination of

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[202] Law of Turkmenistan "On Nature Protection" of 1 March 2014 (amended 18 August 2015 and 20 March 2017). Statements of Mejlis of Turkmenistan. 2014. No. 1. Art. 40. https://minjust.gov.tm/assets/files/law_documents/hukuknama_154_ru.pdf

[203] Law of Turkmenistan "On Environmental Security" of 3 June 2017. Statements of Mejlis of Turkmenistan. 2017. No. 2. Art. 72. http://minjust.gov.tm/mcenter-single-ru/179

[204] Water Code of Turkmenistan. Approved by the Law of Turkmenistan "On Approval and Enactment of the Water Code of Turkmenistan" of 15 October 2016 No. 456-V. Statements of Mejlis of Turkmenistan. 2016. No. 4. Art. 139. https://minjust.gov.tm/assets/files/law_documents/hukuknama_527_ru.pdf

[205] Law of Turkmenistan "On Civil Defense" of 29 November 2003 Statements of Mejlis of Turkmenistan. 2003. No. 4. Art. 44.

[206] Law of Turkmenistan "On the National Red Crescent Society of Turkmenistan" of 22 December 2012. No. 357-IV Statements of Mejlis of Turkmenistan. 2012. No. 3-4. Art. 108. https://www.tgymj.gov.tm/ru/o-nas/z-a-k-o-n-o-natsionalnom-obshchestve-krasnogo-polumesyatsa-turkmenistana

the circumstances that served as the basis for its introduction, the restoration of normal conditions necessary to ensure the safety of life and health, the protection of human and civil rights and freedoms, the saving of the national historical and cultural heritage from destruction and the protection of the constitutional order of Turkmenistan.[207]

The Law "On International Humanitarian Assistance in Emergency Situations" (2020) establishes the legal, organizational and economic framework for international humanitarian assistance in emergencies. It significantly expands the capacity of the national mechanism for DRR at the international level.[208]

The Law "On Prevention and Elimination of Emergency Situations" (2021) regulates a set of measures aimed at reducing the risk of emergencies as much as possible, preserving human health and reducing damage to the natural environment and material losses in case of their occurrence. Public authorities and local self-government bodies organize rescue and other emergency work and ensure evacuation measures in case of emergency.[209]

Conclusions: A review of the current mitigation, adaptation and DRR strategies, programs and plans in Turkmenistan, as well as climate legislation, leads to the following conclusions:

1. Turkmenistan is currently in the process of establishing national planning processes and implementing mitigation and adaptation measures in virtually all sectors of the economy. The National Climate Change Strategy provides a policy framework for building climate resilience and low-carbon development policy in Turkmenistan. It outlines priorities for providing climate change mitigation and adaptation measures for key sectors of the economy. The strategy aims to stimulate a shift towards integrated and dynamic planning to ensure the sustainable development of the country and its economic sectors in the future, taking into account climate change projections in the medium and long term.

2. National Socio-Economic Development Strategies and Programs include mitigation and adaptation measures and DRR, which are implemented at the national, sectoral and regional levels. In general, program documents at the national level provide the basis for sectoral and regional planning. In order to enhance

[207] Law of Turkmenistan "On Emergency Regime" of 22 June 2013. Statements of Mejlis of Turkmenistan. 2013. No. 2. Part II. Ст. 42.

[208] Law of Turkmenistan "On International Humanitarian Assistance in Emergency Situations" of 22 August 2020. Statements of Mejlis of Turkmenistan. 2020. No. 3. Art. 34.

[209] Law of Turkmenistan "On Prevention and Elimination of Emergency Situations" (new version) of 13 March 2021. Statements of Mejlis of Turkmenistan 2021. No. 1. Art. 9. https://minjust.gov.tm/assets/files/law _documents/hukuknama_225_ru.pdf

mitigation and adaptation capacity, build resilience and reduce vulnerability to climate change, these measures should be a mandatory element and an integral part of these policy documents. National adaptation planning processes should be undertaken as an ongoing process that enables states to assess their vulnerability, consider capacity, identify options and integrate adaptation into development and sectoral planning, as well as to develop implementation strategies, build capacity and promote coordination and synergies.[210] At present, however, mitigation and adaptation activities are overly dispersed and dissolved in the overall mass of other planned activities under various programs and strategies, are not consolidated into one single document and therefore lack a highly targeted context.

3. The National Climate Change Strategy calls for the development of unified NMPs and NAPs, as well as sectoral and regional plans. The development of unified national mitigation and adaptation plans can define the roles and responsibilities of all relevant key ministries and provide a roadmap for integrating mitigation and adaptation into sectoral planning processes. Currently, the first step in this direction is the adoption of the National Action Plan on the Adaptation of the Public Health of Turkmenistan to Climate Change and its Adverse Impacts for 2020-2025. Its goal is to reduce vulnerability and strengthen adaptation measures to minimize the adverse impacts of climate change on human health in Turkmenistan. Climate change mitigation and adaptation planning is one of the most important methods to increase resilience and reduce vulnerability to climate change, as well as to prevent and reduce GHG emissions, which should be taken into account in the development of climate legislation.

4. A review of Turkmenistan's climate legislation shows that an important package of legislation has been adopted in recent years, which forms a suitable basis for prioritizing support for low-carbon and climate-resilient development in the country. Climate change issues are not yet sufficiently reflected in national legislation, however. The current legal and regulatory framework is still in its formative stages and has much room for development.

5. The climate legislation of Turkmenistan, in its content and scope, does not yet include the whole complex of relations for the protection of the climate system and, accordingly, is not singled out as an independent legal institution. The process of

[210] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

the formation of climate legislation takes place on the basis of environmental legislation, as evidenced by the large share of legal norms in its structure.

6. In the process of formation of climate legislation, certain contours and, accordingly, the framework of its legal regulation are beginning to emerge. In its current form, such legislation regulates only certain aspects related to climate change.

7. Despite progress in policies and legislation to meet mitigation and adaptation goals and targets, these issues are not yet sufficiently reflected in national legislation and are predominantly addressed at the level of policy statements.

8. The measures taken to overcome and reduce the effects of climate change in Turkmenistan largely determine the need for further development of national climate legislation. The UNFCCC on climate change, the Paris Climate Agreement of the UNFCCC and the updated TNSCC adopted in accordance with them comprise an important legal basis for this.

9. These conclusions regarding further steps in the development of national climate legislation necessitate the need to intensify the activities of state structures to implement the norms of international climate law in national legislation. It is a matter of the consistent implementation of the requirements of the UNFCCC, the Paris Agreement and other international climate documents, which can be ensured on the basis of coordination and coherence between the relevant state structures on this issue.

6 Institutional mechanisms of Turkmenistan governing climate change

6.1 Institutional Framework for Climate Change Governance

To define the institutional management system, it is first of all necessary to identify the key actors, that is, the set of bodies involved in the process of mitigation and adaptation to climate change. Climate change management within the state should cover all the economic entities that, in one way or another, have a negative impact on human health and the environment and emit GHGs into the atmosphere. These include businesses and organizations, industries and many other stakeholders. Since climate change creates a new situation, it is necessary to assess the current institutional management system and adjust their actions to the existing conditions. The current institutional system may contain barriers, so as a first step, the functions and powers of organizational structures at all levels need to be analyzed to identify their ability to contribute to the prevention and mitigation of adverse impacts of climate change. This will require an adequate response from organizational structures in contact with climate change measures. Generally speaking, institutional arrangements need an appropriate legal framework of legally binding powers that legitimize requests for resources, facilitate the articulation of new responsibilities, formalize the process, facilitate cooperation and overcome institutional barriers to data ownership.[211] It is a question of increasing the capacity of organizational structures through legal instruments by giving them the necessary scope of functions and powers and defining the degree of responsibility and interaction at all levels of management.

[211] Обзор институциональных механизмов, включая управление данными для обеспечения транспарентности Консультативная группа экспертов (КГЭ) 2021 г.

A large number of executive and economic actors, on both the national and local levels, are involved in climate change activities.

The national level encompasses governmental structures such as ministries, agencies and other central executive bodies that participate in climate risk management within the framework of their responsibilities and have relevant decision-making powers on these issues. The national level has the leading role in implementing mitigation and adaptation measures and reducing climate risks. This list is headed by the Cabinet of Ministers of Turkmenistan.

The national level includes ministries and agencies in the fields of environment, water, agriculture, finance and economy, health education, the energy sector, industry, construction, defense, statistics, local executive authorities, scientific institutions, public associations and the private sector.

The Cabinet of Ministers of Turkmenistan (**the Government**) is the executive and administrative body that directs all executive and administrative bodies and ensures their coordinated activities. In accordance with the Law "On the Cabinet of Ministers of Turkmenistan", the Government carries out the state management of the economic, social and cultural development of the country; it solves the issues of organization of management of industrial, agricultural, construction and defense enterprises, means of transport, communication and information; and it implements measures for the protection and rational use of natural resources.[212]

Thus, the Cabinet of Ministers is the main link in the system of executive power, managing all the sectors of the economy and the activities of the executive authorities, including mitigation and adaptation to climate change. With so many functions and powers, the Cabinet of Ministers plays an important role in decision-making on climate change issues.

The Ministry of Environmental Protection of Turkmenistan (**MEPT**) is the key executive authority responsible for environmental protection, as well as the responsible implementer of the TNSCC, including attracting environmentally friendly technologies to the country, adapting to climate change and reducing pollutant, ODS and GHG emissions into the atmospheric air. The MEPT is the executive structure for coordinating the fulfilment of Turkmenistan's international commitments to the UNFCCC and the Paris Climate Agreement.

The Hydrometeorology Department (Hydromet), under the jurisdiction of the MEPT, carries out systematic observations of the state of the atmosphere, ionosphere, surface waters (water bodies), agricultural crops and pastures. It is entrusted with the implementation of hydrometeorological support and

[212] Law of Turkmenistan "On the Cabinet of Ministers of Turkmenistan" of 24 November 1995, No. 82-1. https://continent-online.com/Document/?doc_id=31338616#pos=0;0

communication of operational information on natural and dangerous hydrometeorological phenomena to ministries, departments, other bodies and organizations, as well as the general population.[213]

The Ministry of Agriculture of Turkmenistan (**MAT**) carries out prospective forecasting and analyses of agricultural development to develop measures to provide the population with agricultural products and introduce high-yielding and locally adapted crop varieties. The Ministry organizes the planning of measures to adapt agriculture to the existing climatic threats, prepares proposals to ensure the growth of crop yields and determines priority areas of agricultural research and development.

The Land Resources Service of the MAT pursues a unified policy with regard to relations, ensures the management of land resources and organizes work on the implementation of land reform. The Service is responsible for the distribution and redistribution of the land fund, methodological guidance and coordination of land management activities, state control over the use and protection of land, monitoring of the condition and use of land and maintaining the state land cadaster for all categories of land ownership and land use, as well as carrying out works on state land management.

The Ministry of Finance and Economy of Turkmenistan (**MF&ET**) is the central executive authority responsible for the implementation of the country's financial and economic policy. The main tasks and functions of MF&ET include the development and implementation of a unified state policy in economic, financial, fiscal and investment policy, as well as state management of the economy, developing plans for socio-economic development, drafting the state budget and ensuring its effective and timely execution, coordinating measures for the development and implementation of investment policy, attracting internal and external investments (including foreign direct investments), implementing state policy and implementing the state budget. One of the most important priorities of MF&ET's activities is to actively promote the implementation of the SDGs.[214]

The State Committee for Water Resources of Turkmenistan (**SCWRT**) manages water resources, provides irrigation water to economic sectors and carries out the planning, distribution and accounting of water resources use. The SCWRT maintains the water cadaster, operates water management systems, reservoirs and hydraulic structures, and controls the rational use of water resources and the application of water-saving technologies. The SCWRT designs water management

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[213] Law of Turkmenistan "On Hydrometeorological Activity" of 15 September 1999 (amended 18 April 2009 and 26 November 2010). Statements of Mejlis of Turkmenistan. 1999. No. 3. Art. 46.

[214] Official website of the Ministry of Finance and Economy of Turkmenistan. https://fineconomic.gov.tm/static-pages/6/7

facilities and hydraulic structures, including those for pasture use, and also develops water-saving and soil-protective technologies for irrigation water use that prevent secondary salinization and land degradation.[215]

The Ministry of Health and Medical Industry of Turkmenistan (MH&MIT) carries out sanitary, hygienic and anti-epidemic measures for the prevention and elimination of infectious and parasitic diseases and the sanitary protection of the country's territory from the introduction and spread of quarantine diseases, and also carries out state sanitary-epidemiological supervision. MH&MIT ensures implementation of the unified state policy on atmospheric air protection, determines the NAPs of pollutant concentrations in the atmospheric air and tentatively safe levels of exposure to PT in the atmospheric air of populated areas and places of mass recreation of the population and establishes the hazard classes of PT emitted into the atmospheric air.

The Ministry of Education of Turkmenistan (MEdT) is an executive body within the Government that implements state education policy and directs educational development. The MEdT coordinates the activities of educational institutions, regulates organizational, methodological and training activities, participates in the development of action plans for the implementation of Turkmenistan's state policy and programs for the education of students, ensures constant control over the improvement of the quality of education through the introduction of innovative teaching methods and exercises state control over education.[216] The training of environmental specialists is also the responsibility of the MEdT.

An important place in the organizational structure of management of the country's economy is occupied by organizations of the energy sector and industry. These are the branches of oil and gas, chemical, electric power, construction industry, etc.

Ministry of Energy of Turkmenistan (MEnT) implements state policy regarding the electric power industry, ensures the safe and reliable functioning of the electric power system, carries out electric power supervision, participates in the formation of the balance of production and consumption of electric power, establishes the functioning regime of the electric power system, manages the electric power system

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[215] Water Code of Turkmenistan. Approved by the Law of Turkmenistan "On Approval and Enactment of the Water Code of Turkmenistan" of 15 October 2016, No. 456-V. Statements of Mejlis of Turkmenistan. 2016. No. 4. Art. 139. https://minjust.gov.tm/assets/files/law_documents/hukuknama_527_ru.pdf

[216] Law of Turkmenistan "On Education" (new version) of 5 June 2021 No. 380-VI. Statements of Mejlis of Turkmenistan. 2021. No. 2-3. Art. 43. https://minjust.gov.tm/assets/files/law_documents/hukuknama_482_ru.pdf

of the country, develops and implements measures on rational use of the electric power system and develops and implements measures on rational use of the electric power system.

The MEnT is responsible for the implementation of the National Strategy for the Development of Renewable Energy in Turkmenistan until 2030 and the Law on Renewable Energy Sources.[217] In accordance with the Law, the MEnT implements the state policy regarding RES, keeps records of RES reserves, including the number of installations and the volume of energy produced from RES, determines the procedure for maintaining the state cadaster of RES and the use of its data, takes appropriate measures to ensure the guaranteed connection of installations to the state energy systems, monitors the use of RES, introduces scientific and technical achievements in the development of RES and coordinates activities on innovative development.

State Concern Turkmenneft is a state company (Concern) that develops oil fields throughout the country and ensures the creation of economic and social conditions for the effective development of oil and gas condensate production. The main objectives of the Concern include overseeing the development of the country's oil and gas industry for condensate production and the development of oil fields throughout the territory of Turkmenistan, ensuring the growth of hydrocarbon reserves as well as the most complete and rational use of oil resources, obtaining the greatest economic effect from development and introducing new equipment and technology.

State Concern Turkmengaz is a state-owned gas production and distribution company engaged in the exploration, production, transportation and processing of natural gas and condensate. Turkmengaz participates in the development and implementation of state programs for the development of the gas sector, the gas supply system and the national gasification program. Its strategic focus is to build up gas potential and diversify energy supplies to world markets.

In accordance with the Program for the Development of the Oil and Gas Industry of Turkmenistan until 2030, Turkmengaz pays special attention to the deeper and more comprehensive processing of natural gas through the accelerated modernization of the fuel and energy complex (FEC), the expansion of its infrastructure and the establishment of hydrogen production, which is being developed as a strategy for the "fuel of the future", which will improve the effectiveness of measures taken to mitigate the impact of climate change. In industrial production, hydrogen provides heat without generating GHGs, as the

[217] Law of Turkmenistan "On Renewable Energy Sources" of 13 March 2021. https://minjust.gov.tm/ru/hukuk/merkezi/hukuk/222.

calorific value of hydrogen is three times higher than that of other fuels.[218] Important consideration is given to the environmental aspects of hydrocarbon field development and to low-carbon energy. For the transition to "green" energy technologies without destroying the environment, RES – primarily wind and solar – are being actively developed.

State Concern Turkmenhimiya is a state company that develops and shapes the most important directions of development of the chemical industry of Turkmenistan. The main goal of the Concern is to meet the needs of the economic sectors dealing with chemical industry products and to improve the efficiency of the management of enterprises and organizations within the chemical complex. The Concern pays special attention to the production of mineral fertilizers due to the availability of the raw material base, the high capacity of the domestic market for this type of products and the increasing efficiency of agricultural production.

The Ministry of Construction and Architecture of Turkmenistan is an executive authority responsible for the implementation of state policy on architecture, urban planning and seismological works, and it determines the country's development strategy for construction activities. The main activity of the Ministry is the construction of social and cultural facilities, residential buildings and industrial and communal facilities.

The Ministry of Industry and Construction Production of Turkmenistan is an executive authority that carries out state management and unified state policy governing industry.

The Ministry of Defense of Turkmenistan (Main Directorate of Civil Defense and Rescue Works) is a specialized unit of the Ministry of Defense dealing with emergency prevention and elimination as well as civil defense. According to the Law on the State of Emergency, the forces and means of civil defense bodies and units of the Ministry of Defense are used to ensure the state of emergency.[219] The civil defense forces participate in measures to prevent and eliminate emergencies and their consequences. The Ministry of Defense is responsible for the preparation of civil defense forces for the performance of their tasks.[220] The Main Directorate of Civil Defense and Rescue Works carries out a set of measures to ensure the environmental

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[218] Annals of the Renaissance Era of the new era of the mighty state – the year 2022. Oil and Gas Complex. https://turkmenistan.gov.tm/ru/post/69128/letopis-ery-vozrozhdeniya-novoj-epohi-mogushchestvennogo-gosudarstva-god-2022-neftegazovyj-kompleks

[219] Law of Turkmenistan "On Emergency Situations" of 22 June 2013. Statements of Mejlis of Turkmenistan. 2013. No. 2. Part II. Art. 42.

[220] Law of Turkmenistan "On Prevention and Elimination of Emergency Situations" (new version) of 13 March 2021. Statements of Mejlis of Turkmenistan. 2021. No. 1. Art. 9. https://minjust. Gov.tm/assets/files/law _documents/hukuknama_225_ru.pdf

safety of the population and the territory of the country from natural and man-made emergencies.

The State Committee on Statistics of Turkmenistan is an executive body power that carries out functions pertaining to the formation of official statistical information on all branches of the economy, social development, demography and ecology, and also functions on control and supervision over the state statistical activity within the territory of Turkmenistan.[221] International legal instruments recognize the need for public and other stakeholders to be consulted and involved in the development of climate change issues.

The Academy of Sciences of Turkmenistan (AST) is a scientific organization whose activities are aimed at implementing the state's scientific and technical policy and state programs of scientific and technical development.[222] AST's research institutes include the Center of Technologies, encompassing the Laboratory of Environmental Protection Technologies, which is engaged in research work on methods of preserving the purity of soil, water and air and cleaning them from various harmful substances, based on the effects of natural and anthropogenic factors; it also assesses the state of environmental changes.[223] The Institute of Chemistry plans in the future to develop the technology for compost production on the basis of plant-based waste (straw, weeds, etc.) as well as the treatment and reuse of sewage, mineralized water and industrial waste and the study of ways to utilize waste from oil refineries in the national economy.[224]

The Union of Industrialists and Entrepreneurs of Turkmenistan (UIET)[225] is a public organization uniting individuals and legal entities engaged in entrepreneurial activity on the basis of private and/or mixed (united) forms of ownership. One of its tasks is to express and protect the rights and legitimate interests of its members and to promote the development of entrepreneurship in Turkmenistan. Its activities include the field of the environment.

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[221] Law of Turkmenistan "On Statistics" of 31 March 2012. Statements of Mejlis of Turkmenistan. 2012. No. 1. Art. 39. https://minjust.gov.tm/assets/files/law_documents/hukuknama_368_ru.pdf

[222] Academy of Sciences of Turkmenistan. 2021. About Us. https://www.science.gov.tm/about/

[223] Academy of Sciences of Turkmenistan. 2021. Technology Centre. https://www.science.gov.tm/organisations/technocenter/

[224] Academy of Sciences of Turkmenistan. 2021. Institute of Chemistry. https://www.science.gov.tm/organisations/chemical_institute/

[225] UNDP in Turkmenistan. 2020. Blog. Who and what recycles in Turkmenistan? https://www.tm.undp.org/content/turkmenistan/ru/home/blog/Who-recycles-what-in-Turkmenistan.html

The Nature Conservation Society (NCS) is one of the key national civil society organizations in Turkmenistan, established in 1968. From 1978 to the present, the Society has been a full member of the International Union for Conservation of Nature,[226] with branches in all regions (*velayats*) of the country. The staff and members of the association hold annual exhibitions on World Environment Day and other significant dates and organize and hold environmental events. Among the projects of the Association are the "Involvement of the public and support of civil society in the implementation of the Aarhus Convention", the organization of the Aarhus Centre with the support of the OSCE Centre in Turkmenistan and the "Relevance of the disposal of mercury-containing waste in Turkmenistan" with the support of the US Embassy in Turkmenistan.[227] As part of the implementation of the RDF project, the OOP has conducted large-scale information activities on the harmful effects of extremely hazardous RDF on human health and the environment when improperly handled.

The enterprise of the public association Tebigy Kuwwat was registered in 2003 under the NCS and operates in accordance with the main provisions of the legislative framework of Turkmenistan and the state programs on environmental protection.[228] The main objectives of Tebigy Kuwwat include innovative activities on environmental protection issues and the implementation of environmental projects, consulting activities and information support for capacity building of various layers of civil society, as well as holding seminars and roundtables on sustainable development, climate change and renewable energy. Tebigy Kuwwat prepares and disseminates information materials on environmental protection issues, including climate change; on its initiative, it organizes seminars on the environmental rights of citizens in accordance with the Aarhus Convention, waste management and actions among young people on the separate collection of household waste in cities and other settlements.

The public association Ecodurmush organizes various events in the area of ecology (seminars, roundtables) with representatives of the public and the relevant state bodies; it also distributes information materials on nature protection, including

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[226] Association for the Development of Civil Society. 2020. Turkmenistan. Nature Conservation Society of Turkmenistan has joined the global network for reducing natural disasters. http://cso-central.asia/obshhestvo-oxrany-prirody-turkmenistana-vstupilo-v-globalnuyu-set-po-snizheniyu-prirodnyx-katastrof/

[227] NGOs in Turkmenistan. 2021. PAS. https://ngo-turkmenistan.org/ngo/2017/01/10/obshchestvo-okhrany-prirody-turkmenistana/

[228] Tebigy Kuwwat's official website. 2021. General Information. http://tebigykuwwat.org/tebigy-kuwwat

within the mass media. This educational work touches upon, among other things, climate change issues.

The local level includes bodies of local executive power (*khakimliki* of all levels) and local self-government (*gengeshi*), as well as local subdivisions of ministries, departments and other executive bodies. In accordance with the Constitution, local executive power in Turkmenistan is exercised by *khakims* (governors) of *velayats* (provinces); by *khakims* in cities with *velayat* rights; by *khakims* of *etraps* (districts); and by *khakims* of cities with *etrap* rights. According to the Law on Local Executive Power (2010), the *khakims* are representatives of the president in the field. They take measures for the rational use and protection of land, subsoil, water, forests, atmospheric air, flora and fauna and other natural resources in the relevant territory and exercise control in this area.[229]

In accordance with the Constitution of the country, the system of local self-government is formed by *gengeshs*, which are representative bodies of people's power in the territory of a city, *etrap*, settlement or *gengeshlik*. They determine measures for the rational use of natural resources and environmental protection in the territory under their jurisdiction. According to the Law "On Gengesh", the authority of local self-government bodies includes developing measures on the rational use of natural resources and environmental protection, carrying out works on the improvement and landscaping of the city, settlements and villages of *gengeshlik* and taking measures on the care of green plants.[230] They ensure the rights and legitimate interests of land owners, users and lessees, exercise control over the rational use of land resources and ensure the maintenance of the land cadaster by *daihan* associations and other agricultural enterprises.[231]

The structure of ministries and departments on the ground includes their respective subdivisions in *velayats* and *etraps*.

[229] Law of Turkmenistan "On Local Executive Power" of 10 May 2010. Statements of Mejlis of Turkmenistan. 2010. No. 2. Art. 33.

[230] Law of Turkmenistan "On Gengesh" (new version) of 25 October 2005 (amended 28 June 2007). Statements of Mejlis of Turkmenistan. 2007. No. 1. Art. 39.

[231] Land Code of Turkmenistan. Approved by the Law of Turkmenistan of 25 October 2004. "On Approval and Enactment of the Code of Turkmenistan "On Land". Statements of Mejlis of Turkmenistan. 2004. No. 4. Art. 33.
https://minjust.gov.tm/assets/files/law_documents/hukuknama_540_ru.pdf

6.2 Inter-ministerial coordination on climate change

At this stage, the impact of climate change is no longer a factor related only to environmental issues; rather, it affects virtually all sectors of the economy. Therefore, as confirmed above, climate change necessitates close cooperation at all levels – national, sectoral and regional. Climate change mitigation and adaptation measures can be achieved through the establishment of special coordination mechanisms. In this regard, there is a need for clear coordination and collaboration among all stakeholders to effectively address emerging issues of climate change, vulnerability and adaptation. Currently, almost all ministries and agencies are beginning to take into account possible impacts from climate change. Unfortunately, however, these actions are taking place without proper coordination and collaboration, which could be of mutual practical interest. Under such a mechanism, useful information on ongoing and planned actions could eliminate duplication and the irrational expenditure of financial resources. At the same time, the current regulatory legal framework does not cover the whole range of issues of cooperation and inter-sectoral interaction, nor does it contain detailed mechanisms for preparation, coordination and decision-making.

At present in Turkmenistan, the functions of inter-sectoral coordination are performed by separate bodies of executive power. In particular, the MEPT coordinates the activities of state administration bodies, enterprises, institutions and organizations, irrespective of their form of ownership, with regard to nature protection and rational nature management; it also exercises state control over compliance with environmental legislation by all legal entities and individuals. Turkmenhydromet exercises control over the organization of hydrometeorological observation points in ministries and departments, as well as over the recording and storage of hydrometeorological observation materials, and supervises compliance with the existing normative documents on the production of hydrometeorological observations and works. At the same time, these ministries and departments cannot use the functions of coordination and control over the environmental protection activities of other ministries and departments on mitigation and adaptation to climate change.

Since most adaptation and mitigation activities affect different spheres of socio-economic life, the TNSCC envisages the establishment of an Interdepartmental Commission on Climate Change, which should be empowered to address issues related to climate change in Turkmenistan (GHG inventory, climate change vulnerability and adaptation assessment, etc.). Such a mechanism will strengthen communication and cooperation between sectors at all levels and increase understanding of the benefits of mutual cooperation among all stakeholders. A permanent Secretariat is envisaged to provide technical support to the Interagency Commission.[232]

In view of this requirement, the Interdepartmental Commission on Environmental Protection was established by the Presidential Decision of 23 October 2020. Its main purpose is to coordinate activities to fulfill Turkmenistan's obligations to implement the requirements regarding environmental protection and international environmental treaties to which Turkmenistan is a party, including the UNFCCC and the Paris Climate Agreement.[233]

According to the Statute, the functions of the Interdepartmental Commission include preparing proposals on Turkmenistan's position at meetings of the parties to environmental conventions, coordinating the activities of *khakimliks*, *gengeshs* and voluntary associations in the implementation of Turkmenistan's international environmental treaties, organizing the preparation of Turkmenistan's national reports related to the fulfilment of its obligations to implement the provisions of environmental conventions and programs, participating in the preparation of programs for the implementation of the environmental conventions and programs and taking part in the preparation of national reports. The Interdepartmental Commission has the right to request the necessary information to implement the requirements of Turkmenistan's international environmental treaties, as well as to involve scientists, representatives of local executive authorities, local self-government bodies and public associations and to take binding decisions on these issues within its authority.[234]

There is, however, a need to strengthen the capacity of the Inter-Ministerial Commission to support and facilitate measures to combat the negative manifestations of climate change. It is important to give it additional responsibilities for coordinating mitigation and adaptation measures through the ministries concerned, as well as for prioritizing and allocating resources and monitoring results. This includes coordination among key ministries and agencies involved in climate change activities. In particular, the TNSCC proposes that the Commission be responsible for receiving reports from relevant ministries and agencies that are key to the relevant priority sectors for adaptation and mitigation, mobilizing financial

[232] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[233] Decree of the President of Turkmenistan of 23 October 2020 No. 1970. "On the establishment of the Interdepartmental Commission on Environmental Protection". Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2020. No. 10. Art. 1666.

[234] Ibid.

and logistical resources, monitoring and evaluating the implementation of adaptation and mitigation activities and informing stakeholders and the public.[235]

The decisions of the Commission shall be binding on all ministries and departments, as well as on enterprises, institutions and organizations regardless of their organizational and legal form and departmental affiliation.

The Commission should provide a forum for the discussion of the interactions between all stakeholders, including the private sector, international development partners and independent experts (non-voting), as well as the exchange of information and the development of measures to support and coordinate mitigation and adaptation efforts.

In order to ensure the effectiveness of the Commission's work in providing professional and expert support (including consultations, recommendations, findings, conclusions, opinions and reports) on specific sectoral and cross-sectoral issues, appropriate working groups should be established under the Commission (e.g., on the implementation of international treaties and agreements on climate change).

It is advisable to include representatives of key ministries, agencies, as well as organizations that are directly related to the affected problems, local executive authorities and local self-government bodies, as well as public associations and the private sector in the composition of the Interdepartmental Commission. It is also important to increase the level of representation of state structures in the Interdepartmental Commission, bringing it to the level of top officials (heads) of these structures.

By the Decree of the President of Turkmenistan dated 2 June 2023, the Interdepartmental Group on the Reduction of Methane Emissions was established, and its composition and regulations were approved. The Interdepartmental Group includes representatives of the main sectors related to GHG emissions, including methane. In accordance with the regulations, the main objectives of the Interdepartmental Group are to facilitate the implementation of international agreements on methane, to improve coordination of activities of state bodies, local governments and public associations to reduce methane emissions and to implement the country's environmental policy.[236]

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[235] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[236] Decree of the President of Turkmenistan No. 585 of 2 June 2023, "On Establishment of the Interagency Group of Turkmenistan on the Reduction of Methane Emissions."

In addition to these inter-ministerial structures, other commissions have been established that also address the mitigation of impacts and adaptation to climate change:

- Intersectoral Commission on Clean Development Mechanisms, to actively attract advanced technologies and foreign investments into the national economy through the implementation of environmentally friendly and energy-saving technologies.[237]
- Interdepartmental Commission of Turkmenistan on Caspian Sea Issues, to consider and resolve issues related to various aspects of activities in the Caspian Sea.[238]
- National Coordination Mechanism and SDG Working Group.[239]
- The Water Supply Commission, "to ensure uninterrupted water supply to the sectors of Turkmenistan's economy, rational and efficient use of water resources, as well as to create water reserves".[240]

6.3 Education, training, awareness, participation and public access to information on climate change issues

The UNFCCC and the Paris Climate Agreement pay special attention to education, training, information and public access to information on climate change issues, which are addressed in Article 6 of the UNFCCC and Article 12 of the Paris Agreement. They highlight six equal elements for cooperation on climate change.

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[237] Presidential Decree of 14 May 2009, No. 10429. On measures to introduce environmental and energy-saving technologies in accordance with the UN Framework Convention on Climate Change and the Kyoto Protocol. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2009. No. 5. Art. 279.

[238] Decree of the President of Turkmenistan of 11 April 2007, No. 8524. "On Establishment of the Interdepartmental Commission of Turkmenistan on the Caspian Sea Issues". Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2007. No. 4. Art. 40.

[239] Presidential Decree of 17 November 2017, No. 438. On measures to implement in Turkmenistan the Sustainable Development Goals adopted by the Member States of the United Nations.

[240] The Government Commission on Water Supply has been established in Turkmenistan. https://turkmenportal.com/blog/48281/v-turkmenistane-uchrezhdena-pravitelstvennaya-komissiya-po-vodosnabzheniyu?utm_source=yxnews&utm_me%E2%80%A6

Although Article 12 of the Paris Agreement is in direct correspondence with Article 6 of the UNFCCC, there is nevertheless a difference in the structure of the provisions regarding national measures and international cooperation. While in Article 6 of the UNFCCC these two levels, namely national and international, are clearly distinguished and coexist, in Article 12, the cooperation aspect is brought to the forefront.[241]

According to the wording of Article 12, on a plain reading, it could be interpreted as cooperation constituting the main thrust that should take place in relation to the measures subsequently envisaged, including in particular education and training. However, the drafting history as well as the interpretation according to the object and purpose of Article 12 does not support such a sharp departure from the content of Article 6 of the UNFCCC. Rather, the purpose of Article 12 of the Paris Agreement was to transpose the obligations of Article 6 of the UNFCCC into the Paris Agreement to make it shorter and more robust, not at the expense of the requirement to implement measures at the national level. Thus, the article should be read in the sense that parties must take measures at the national level and cooperate on subsequent elements. This is also more consistent with the object and purpose of Article 12 of the Paris Agreement: to intensify action under the Agreement, which is to be achieved both by national measures and through international cooperation.[242]

Article 12 of the Paris Agreement is based on the idea of engaging and empowering civil society through various means, including education, training, public awareness, public participation and public access to information. While the first three of these measures aim to increase knowledge and awareness of climate change issues among all members of society, the latter requires the state to provide access to information to individuals and to allow public participation in climate change issues. Public participation and public access to information are thus more suitable to form the basis of individual claims against the state. However, much depends on the national legal context and mode of implementation, as Article 12 cannot be directly applicable without appropriate implementation in national legal systems.[243]

In Turkmenistan, education, training and public awareness are playing an increasingly important role in creating favorable conditions for action to mitigate anthropogenic climate change. Under Article 6 of the UNFCCC, parties, including

[241] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

[242] Ibid.

[243] James Crawford, Brownlie's Principles of Public International Law (8th ed., 2008, 57-9).

Turkmenistan, must "promote and facilitate" the development and implementation of education and public awareness programs on climate change and its effects, public access to information on climate change and its effects, public participation in the consideration of climate change and its effects and in the development of appropriate response measures and the training of scientific, technical and managerial personnel.[244] Further, under Article 12 of the Paris Agreement, "The Parties shall cooperate to implement, as appropriate, measures to enhance education, training, public awareness, public participation and public access to information on climate change".[245]

Under Article 12 of the Paris Agreement, education aims to provide systematic learning about aspects of climate change. Climate change education means providing knowledge about the causes, consequences, hazards and threats, as well as possible ways to prevent climate change, especially by reducing GHG emissions. Education can help people understand and support action to mitigate climate change and to change their own behavior; to take action and agree with measures taken to prevent further increases in global temperatures.[246]

In Turkmenistan, education occupies a leading place among the measures taken to prevent climate change. A system of environmental education, staff training and further training, and a system for informing the population about environmental issues has been established and is functioning in the country. Co-operation with environmental public associations is underway. Organizational management structures have been established and are functioning in this area; relevant strategies and programs have been adopted and a legal and regulatory framework has been formed. Thus, there is sufficient potential to fulfil the requirements of the UNFCCC and the Paris Climate Agreement.

The basis for the development of the education sector includes the National Program of Socio-Economic Development of the country for 2011-2030 as well as national educational programs, which include measures to improve the education system and train highly qualified specialists in accordance with international standards.

The Law "On Education" defines the principles of state policy pertaining to education, as well as the goals, objectives, functions of the education system and the

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[244] UN Framework Convention on Climate Change. https://www.un.org/en/documents/decl_conv/conventions/climate_framework_conv.shtml

[245] Paris Climate Agreement. https://unfccc.int/resource/docs/2015/cop21/rus/l09r.pdf

[246] Geert van Calster and Leonie Reins (eds.), The Paris Agreement on Climate Change: A Commentary. Edward Elgar, 2021. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma9925321263606986&context=L&vid=420CKIS_INST:UKAZ&lang=en&adaptor=Local%20Search%20Engine

organizational basis for its management. Among the basic principles of state policy on education, the Law recognizes "education of citizens to love the environment".[247]

The Nature Protection Act and the Environmental Safety Act form the legal basis for environmental education and upbringing in Turkmenistan. In order to improve the environmental culture of society and the professional training of specialists, universal, continuous and accessible environmental education and upbringing is provided, covering preschool, general secondary education and upbringing, professional training of specialists in primary vocational, secondary vocational and higher vocational educational establishments and further training of their qualifications. Vocational education institutions of various types, irrespective of their profile, provide for the teaching of basic ecology and courses on environmental protection. Education, environmental protection bodies, other state bodies and public associations and the mass media disseminate knowledge of nature protection and rational use of natural resources and conduct environmental propaganda.[248]

The Government of Turkmenistan, together with UNICEF, has taken a number of steps to introduce and further introduce climate change adaptation related subjects into the education system of Turkmenistan. Existing curricula in the primary and secondary school subjects of Natural History, Life Sciences, Ecology, Geography, Agriculture have been reviewed and updated to include climate change components.[249]

In order to raise the level of environmental knowledge in the higher education system, disciplines pertaining to environmental protection and the rational use of natural resources have been introduced, in which issues related to climate change occupy an important place. In particular, the disciplines of Natural History and Geography consider such issues as air and its composition, weather and climate, climate-forming factors, the impact of climate on human life and economic activity and agroclimatic resources. In accordance with the curriculum, students are introduced to the basic concepts of the problem and the general provisions of the

247 Law of Turkmenistan “On education” (new version) of 5 June 2021. No. 380-VI. Statements of Mejlis of Turkmenistan. 2021. No. 2-3. Art. 43. https://turkmenistan.gov.tm/ru/post/55027/zakon-turkmenistana-ob-obrazovanii-novaya-redakciya.

248 Law of Turkmenistan "On Nature Protection" of 1 March 2014. http://minjust.gov.tm/mcenter-single-ru/179; Law of Turkmenistan "On Environmental Security" of 3 June 2017. http://minjust.gov.tm/mcenter-single-ru/179

249 National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019 Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.tm.undp.org/content/turkmenistan/en/home/library/national-strategy-of-turkmenistan-on-climate-change.html

environmental and ecological legislation of Turkmenistan, as well as relevant international conventions.[250]

At the Turkmen State University named after Makhtumkuli, in the Faculty of Geography, 15 to 20 environmental specialists are trained annually in the disciplines of environmental protection and nature management (including environmental expertise, environmental monitoring and ecological monitoring). In the university, the Faculty of Geography annually trains 15 to 20 environmental specialists in disciplines on environmental protection and nature management (including environmental expertise, environmental monitoring, environmental management and environmental audit, industrial ecology, environmental basics of nature management, environmental basics of production technology and aerospace monitoring.[251] The course "Fundamentals of Meteorology and Climatology", which includes climate change issues, is taught in the Departments of Environmental Studies and Hydrometeorology within the Faculty of Geography. The Faculty of Chemistry trains chemists in various specializations, including research work on the development of technologies for the production of products from local raw materials. In the Faculty of Biology, students participate in research on anthropogenic impact on biodiversity.

In the Turkmen State Agricultural University named after S.A. Niyazov, all seven faculties teach the academic discipline General Ecology. The Faculty of Agroecology, which opened in 2020, trains students in the specialties of Agronomy, Agrochemistry and Plant Protection. The disciplines taught focus on such issues as land and water pollution control, as well as agricultural waste management.

At the Dashoguz Agricultural Institute, in the Faculty of Agronomy, graduates are trained within the specialty Agroecology to study general ecology, the ecological bases of production technology, ecological monitoring and research methods. The application of innovative technologies to prevent pollution of land and water resources is given a place, as is the application of innovative technologies to prevent pollution of land and water resources. Every year, the Institute trains 20 specialists in agroecology.

As the Yagshigeldy Kakaev International University of Oil and Gas, the Faculty of Chemical Technology and Ecology trains environmental specialists in the oil and gas sector. The discipline Fundamentals of Ecology and Nature Management is included in the university's training courses.

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[250] Ibid.

[251] Official website of Makhtumkuli Turkmen State University. https://tdu.edu.tm/?/%D0%9E%20%D0%BD%D0%B0%D1%81/&page=4&/

At the Oguzkhan Engineering and Technical University of Turkmenistan, in the Faculty of Biotechnology and Ecology, 25 specialists in the field of ecology graduate annually. The main subjects on which students are trained are environmental engineering, ecology and biotechnology, within the framework of which such issues as the production and consumption waste management, urban ecology and household waste and waste recycling through biotechnology are studied.

Turkmen State Institute of Architecture and Civil Engineering trains engineers, technologists and ecologists in the specialization "Environmental protection and rational use of natural resources" for production, technological, design and research activities pertaining to the technology of purification and utilization of industrial waste and the development of environmentally safe and resource-saving technologies. The special disciplines that are taught include "Applied industrial ecology", "Theoretical bases of environmental protection", "Chemistry of the environment", "Protection of atmospheric air from pollution", "Waste-free production and secondary resources", "Environmental monitoring", "Basics of design and environmental expertise" and "Human ecology".[252]

The Academy of Civil Service under the President of Turkmenistan, a higher professional educational institution and a training and scientific and methodological center for the creation of a national system for training civil servants, raising their professional level and educating managerial personnel, plays a major role in the retraining system. The main purpose of the Academy is to retrain and improve the qualifications of civil servants with higher education, to develop the scientific and methodological basis of public administration and to develop proposals for improving these activities.[253] Specialists in the country's environmental protection agencies, among others, undergo retraining at the Academy.

Responses to the challenges of climate change are complicated by the low level of awareness of climate risks. The key task for the coming period is to create public understanding of the seriousness of climate threats facing the country. Turkmenistan is taking certain steps in this direction; in particular, it has established a legal basis for public access to environmental information and is planning to create a State Environmental Information Fund. At the same time, comprehensive capacity building and awareness-raising measures are needed for all sectors of society. Public awareness raises people's legal awareness, promotes a deeper understanding of

[252] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf

[253] Official website of the Academy of Public Service under the President of Turkmenistan. https://dga.edu.tm/index.php/ru/glavnaya

environmental problems and leads to direct participation in their resolution,[254] including on issues related to climate change.

In terms of public awareness of climate change issues, it is important to use the existing mechanism established within the framework of the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters or the Aarhus Convention (Aarhus, 25 June 1998). Turkmenistan joined the Aarhus Convention in 1999.[255]

The Aarhus Convention is widely recognized as the main international instrument promoting the principles of access to information, public participation in decision-making and access to justice in environmental matters. Whereas most multilateral environmental agreements cover obligations that parties have to each other, the Aarhus Convention covers obligations that parties have to the public. It goes further than any other convention in that it imposes obligations on parties and public authorities to ensure public access to environmental information, participation in decision-making and access to justice for violations of citizens' environmental rights.

An important step towards promoting the provisions of the Convention was the Law of Turkmenistan "On Environmental Information" (2020), which integrates most of its provisions on public access to environmental information. This includes the right of the public to request information and the obligation of state bodies to provide this information. These state bodies are also responsible for collecting, storing, transmitting, disseminating and making environmental information available to the general public. A broader approach is envisaged to define the entities obliged to provide environmental information upon public request. They include not only state and local self-government bodies, but also other organizations and officials obliged to disclose environmental information to the public.[256]

The Aarhus Centre of Turkmenistan, established in 2012, plays an important role in the dissemination of environmental information, including climate change issues and knowledge about its causes, consequences, dangers and threats, as well as on possible ways to prevent climate change among public officials and civil society. The

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[254] Кутузов В.И., Попов А.А. Доступ к экологической информации (правовые аспекты). М, 2004. С. 111.

[255] Decision of the Mejlis of Turkmenistan of 30 April 1999, No. 364-I. On accession to the Aarhus Convention. Statements of Mejlis of Turkmenistan. 1999. No. 1. Art. 18.

[256] Руководствуясь демократическими принципами и высокими мировыми стандартами. Нейтральный Туркменистан. 2020, 3 апреля; Кепбанов Ё.А. Экологическая информация на службу государства и общества (К принятию Закона Туркменистана Об экологической информации). Экологическая культура и охрана окружающей среды. 2020. No. 2 (30). С. 22-27.

Centre promotes the Aarhus Convention, public access to environmental information and the preparation of recommendations on the implementation of the provisions of the Convention in national environmental legislation. It regularly holds seminars on topical issues pertaining to environmental protection in all regions of the country, in universities and general education institutions, as well as environmental actions on forest planting, household waste cleaning and so on. The topics of the meetings cover topical issues related to climate change, rational use and protection of land and water resources, protection of biodiversity and waste management. The Centre actively disseminates and provides free access to its website and to all its publications, including information materials, Internet resources, a database on the management and rational use of natural resources, national legislation and information on implemented national and international projects.

In order to form public opinion, systematic work is needed to inform the general public on environmental issues and the problems related to climate change through state and public organizations and mass media. Turkmenistan has established a system for informing the population about the state of the environment and measures to protect it; magazines and newspapers are published and radio programs are broadcast. In particular, the journals *Problems of Desert Development*, *Ecological Culture and Environmental Protection* and others are systematically published. Programs devoted to the ecology of Turkmenistan, broadcast on local television channels, are highly informative and educational. The Internet site of the MERT has been created and is regularly updated; it provides extensive information on global climate change and actions taken in the country to address this problem.

Conclusions: The analysis of the institutional system relevant to the assessment of its adaptation capacity shows the presence of a large number of organizational structures that form and implement state policy on climate change, carrying out coordinating, regulatory and controlling functions in the relevant sectors of the economy. This analysis shows which organizational structures are involved in the process of mitigation and adaptation to climate change and how their functions and powers are reflected in the legislation.

In Turkmenistan, the existing legislative framework defines the powers of individual ministries and agencies to implement mitigation and adaptation measures. This forms the legal basis for guiding local self-government bodies and public associations in their actions. In this regard, it is important that the legal instruments be used to continue to improve the legal basis of the institutional mechanism in order to increase its effectiveness in overcoming climate threats.

The institutional framework for climate change in Turkmenistan includes a number of ministries and agencies, each of which is responsible for specific tasks within the framework of this multi-sectoral issue. The ministries and agencies have obligations at the level of their respective sectors, which are assigned to their purview in the relevant legislative acts. However, this is not sufficient. According to international requirements, there is still no clear delineation of responsibilities between state structures involved in the mitigation and adaptation process, and the coordination mechanism in this area needs to be improved. At the same time, one of the main conditions for improving the effectiveness of state bodies in the area of climate change is a clear definition of their functions and powers and the achievement of full coordination of their actions. Further improvement of climate change legislation should eliminate existing gaps by defining the authorized body in this area and the roles and responsibilities of other state bodies at the national and local levels. The governance system should adequately respond to, restructure and constantly change in response to these impacts on the climate system, with greater emphasis on ensuring inter-ministerial coordination.

It is necessary to further improve the efficiency of the implementation of legislation on environmental education. First of all, it is important to revise the system of continuous environmental education with a greater emphasis on climate change topics in curricula at all levels, contributing to a deeper understanding of the problems in this area. In this context, it is important to coordinate the work of the structures (departments) of the educational institutions dealing with environmental issues. It is also important to utilize additional opportunities for them to obtain knowledge and information on climate threats in various sectors of the economy and measures taken by the Government to mitigate and adapt to climate change (e.g., interaction with environmental NGOs, the Aarhus Centre, etc.).

7 The legal regulation of climate change: global practice and experience

For the formation of national climate policy and legislation, it is extremely important to study the experiences of foreign countries. At present, much has been accumulated in this area, reflecting the specifics of the ongoing processes in each country while taking into account their peculiarities. The Grantham Institute for Climate Change and Environment Research and the Centre for Climate Change Economics and Policy at the London School of Economics and Political Science maintain a database of relevant national policies and legislation (CCLW).[257] As of September 2022, this database includes more than 2,860 climate-related laws and policies in force around the world. All the parties to the Paris Agreement have at least one law related to climate change or the transition to a low-carbon economy. At least 2,203 laws and policies relate to mitigation, 1,338 have an adaptation component and 424 relate to DRM.[258]

Undoubtedly, the process of developing climate legislation in national states will continue. A number of countries have achieved impressive successes in this direction, and their positive experiences can be used to a large extent for the formation of approaches and structure of climate legislation in other national states. Therefore, under the current conditions, the development of climate legislation is of particular relevance. It is determined by the need to ensure the progressive implementation of international norms aimed at resolving the climate change problem in the domestic legal system. To do this, it is necessary to analyze the factors influencing the creation of this or that scheme of implementation of international law norms within the domestic system of a particular state. The choice of specific countries and approaches

[257] Climate Change Laws of the World: Law and Policy Search. https// climate-laws.org

[258] What is climate change legislation? https://www.lse.ac.uk/granthaminstitute/explainers/what-is-climate-change-legislation/#:~:text=Climate%20change%20legislation%2C%20often%20abbreviated,by%20setting%20its%20legal%20basis.

to solving this problem at the national level is conditioned by geographical and climatic factors and the level of economic development, as well as the peculiarities of the legal system in the context of the ability to perceive the implementation of international climate agreements in national policy and legislation.

7.1 European Union and European countries

7.1.1 European Union

The EU and its institutions have made a significant contribution to the development of international cooperation on climate change through agreement under the UNFCCC, as well as its Kyoto Protocol and the Paris Climate Agreement. The EU plays a leading role in the global response to climate change and has traditionally been a leader in shaping and developing environmental and climate legislation.

At present, the EU has a rich experience in climate change regulation, where radical changes are taking place in terms of the accelerated transition to the implementation of the Paris Climate Agreement and the introduction of the principles of the "green" economy. Numerous discussions, articles and studies testify to the experience of legal climate protection in the EU.[259]

One of the first documents in the development of EU climate legislation was the 1985 Vienna Convention for the Protection of the Ozone Layer, which was supplemented by the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. These international instruments recognized the important role of the ozone layer in the Earth's climate system and stated the need to limit the release of ozone-depleting substances. Later, the 1992 UNFCCC, the 1997 Kyoto Protocol and the 2015 Paris Climate Agreement were adopted within the UN framework, which laid the current foundation for EU policy and climate legislation.

[259] Müller T., Schulze-Felitz H. Auf dem Wege zu einem Klimaschutzrecht – Eine Einleitende Problemskizze. In T. Müller, H. Schulze-Felitz (eds.) Europäisches Klimaschutzrecht. Baden-Baden, 2009. p. 9; European Climate Law – New legal revolution towards climate neutrality in the EU. Przyborowicz, Jakub Stefan Opolskie Studia Administracyjno-Prawne, 2022, Vol. 19 (4), p. 39-53. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=cdi_doaj_primary_oai_doaj_org_article_af83a4f6c3084e2c9d0bbb2175204be5&context=PC&vid=420CKIS_INST:UKAZ; Gray, Kevin R., et al. (eds.). The Oxford Handbook of International Climate Change Law. 2016, pp. 670-687. https://global.oup.com/academic/product/the-oxford-handbook-of-international-climate-change-law-9780199684601?cc=tr&lang=en&

The EU's overall climate strategy is mainly guided by the temperature target of the Paris Agreement and the UN SDGs. In addition, the EU strategy is predominantly based on the IPCC scientific report.[260]

The legal regulation of climate protection in the EU is a system of various measures and policies, which have as their subject a wide range of social relations in various sectors of the economy, due to the complex nature of the climate change problem. This EU experience and the innovative approaches implemented by the EU to address the set tasks of reducing GHG emissions are certainly of interest for the further development of measures to counter climate change. EU environmental law, especially in terms of climate protection regulation, can serve as an illustrative example of the effective implementation of international obligations, as well as a source for analyzing existing problems and new challenges in environmental protection.[261]

Given the numerous regulations adopted by the EU aimed at reducing GHG emissions and increasing renewable energy consumption and energy efficiency, it is safe to say that EU climate legislation has emerged as a sub-discipline of EU law. The EU's extensive package of approaches to climate change regulation is indicative of its efforts to take responsibility for combating climate change.[262]

The following documents currently shape the EU's long-term climate strategy: the Clean Planet for All strategy, the European Green Deal strategy, the EU and Member States' Long-Term Low-GHG Development Strategy, the 2030 Climate Action Plan, the 2050 Climate Action Plan, the EU Climate Change Adaptation Strategy and the Climate Act.

In November 2018, the EU's **Clean Planet for All Strategy** was adopted. This long-term strategy aims to reaffirm Europe's commitment to lead global climate action and present a vision that can lead to net zero GHG emissions by 2050 through a socially just transition in a cost-effective way. It emphasizes the opportunities this transformation offers for Europe's citizens and its economy while identifying the challenges ahead.[263]

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[260] The Intergovernmental Panel on Climate Change. Special Report: Global Warming of 1.5 °C. https://www.ipcc.ch/sr15/

[261] Семенихина В.А. Правовое регулирование охраны климата в Европейском Союзе. Труды Института государства и права Российской академии наук No. 5. 2010. С. 187.

[262] Marjan Peeters, EU Climate Law: Largely Uncharted Legal Territory. Climate Law 9 (2019), pp. 137-147

[263] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank: A Clean Planet for all. A European strategic long-term vision for a

In December 2020, the EU Summit endorsed the **European Green Deal** to ensure the sustainability of its economy by transforming climate and environmental challenges wherever possible in all strategically important areas. The European Green Deal laid the foundation for this transformational change. All EU member states have committed to making the EU the first climate-neutral continent by 2050. To achieve this goal, they have pledged to reduce emissions by at least 55% below 1990 levels by 2030.[264]

The European Green Deal is Europe's structural response and new growth strategy to transform the EU into a modern, resource-efficient and competitive economy in which net GHG emissions are reduced to zero by 2050, there is no dependence of economic growth on resource use, natural capital is protected, sustainably managed and restored, citizens' health and well-being are protected from environmental risks and impacts and no person or place is left behind.

The European Green Deal is a program of action to improve resource efficiency by moving towards a clean circular economy and halting climate change, reversing biodiversity loss and reducing pollution. The program describes the investments required and the available financing instruments. Further improvements to climate legislation are planned under the program.[265]

The EU has set targets for phasing out GHG emissions by 2050. The main climate and energy targets are set in:

- the 2020 climate and energy package;[266]
- the 2030 climate and energy framework.[267]

prosperous, modern, competitive and climate neutral economy. COM/2018/773 final. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0773&from=EN

[264] Delivering the European Green Deal. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en

[265] EU environmental policy. https://wecoop.eu/ru/regional-knowledge-centre/eu-policies-regulations/

[266] 2020 climate & energy package. https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2020-climate-energy-package_en

[267] 2030 climate & energy framework. https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2030-climate-energy-framework_en

These targets have been set to put the EU on the path to becoming a climate neutral economy, as detailed in the long-term strategy to 2050[268] and enshrined in the European Climate Act.[269]

The EU Climate Act. The main climate legislation was published in the Official Journal on 9 July 2021 and entered into force on 29 July 2021. The Act sets a legally binding target of zero GHG emissions by 2050. EU institutions and Member States are obliged to take the necessary measures at both the EU and national levels to achieve this target, taking into account the importance of promoting equity and solidarity between the member states.[270] The Climate Law, as a comprehensive legal instrument for the economic transformation of the EU, should lead to a zero-emission economy.[271]

Climate neutrality by 2050 means achieving zero GHG emissions for EU countries as a whole, mainly through emission reductions, investments in green technologies and environmental protection. The Act aims to ensure that all EU policies contribute to this goal and that all sectors of the economy and society play their respective roles in this direction.

The purposes of the Act are:

- Set a long-term direction of travel to achieve the goal of climate neutrality by 2050 through all policy measures in a socially equitable and cost-effective manner.
- Set a more ambitious EU target for 2030 to put Europe on a responsible path to climate neutrality by 2050.
- Establish a system to monitor progress and take further action if necessary.
- Provide predictability for investors and other economic actors.
- Ensure that the transition to climate neutrality is irreversible.

The adoption of the Act was an important signal for EU Member States to adhere to comprehensive policies and plans to achieve climate neutrality. It should be

[268] 2050 long-term strategy. https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy_en

[269] European Climate Law. https://climate.ec.europa.eu/eu-action/european-green-deal/european-climate-law_en

[270] Ibid.

[271] European Climate Law – New legal revolution towards climate neutrality in the EU Przyborowicz, Jakub Stefan Opolskie Studia Administracyjno-Prawne, 2022, Vol. 19 (4), pp. 39-53. https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=cdi_doaj_primary_oai_doaj_org_article_af83a4f6c3084e2c9d0bbb2175204be5&context=PC&vid=420CKIS_INST:UKAZ

emphasized that the Act will be a new "opening" for future legislative packages and potential financial instruments, a key element of future EU rules and lawmaking.[272] Not coincidentally, the Act provides for measures to monitor progress and adjust actions accordingly, building on existing systems such as the governance process,[273] the national energy and climate plans of the member states,[274] regular reports from the European Environment Agency and the latest scientific data on climate change and its impacts.

In July 2021, the European Commission adopted a set of legislative proposals[275] setting out how it intends to achieve climate neutrality in the EU by 2050,[276] including an interim target of at least 55% net GHG emission reductions by 2030.[277] The package proposes to revise several parts of the EU climate legislation through which the Commission intends to achieve the EU's climate targets under the European Green Deal.[278]

The Fit for 55 legislative proposals cover a wide range of policy areas, including climate, energy, transport and taxation, setting out how the Commission will achieve the updated 2030 target in real terms.[279]

On 24 February 2021, the European Commission adopted a new **EU Climate Change Adaptation Strategy**, setting out how the EU can adapt to the inevitable impacts of climate change and become climate resilient by 2050. The Strategy has four main objectives: to make adaptation smarter, faster and more systematic, and to enhance international action on climate change adaptation.[280]

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[272] Ibid.

[273] Governance of the Energy Union and Climate Action. https://climate.ec.europa.eu/eu-action/climate-strategies-targets/progress-made-cutting-emissions/governance-energy-union-and-climate-action_en

[274] National energy and climate plans. EU countries' 10-year national energy and climate plans for 2021-2030. https://commission.europa.eu/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en

[275] Delivering the European Green Deal. https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal_en

[276] 2050 long-term strategy/ https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy_en

[277] 2030 climate & energy framework/ https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2030-climate-energy-framework_en

[278] Climate strategies & targets. https://climate.ec.europa.eu/eu-action/climate-strategies-targets_en#modal

[279] Delivering the European Green Deal. https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal_en

[280] EU Adaptation Strategy. https://climate.ec.europa.eu/eu-action/adaptation-climate-change/eu-adaptation-strategy_en

Thus, the EU Climate Law includes the following main provisions:

- the Union's legal goal of achieving climate neutrality by 2050;
- an ambitious climate goal for 2030 of reducing net GHG emissions by at least 55% below 1990 levels, with a clear definition of the contribution of emission reductions and removals;
- recognizing the need to enhance carbon sequestration in the EU through the more ambitious regulation of the Land Use, Land Use Change and Forestry Regulation 2018/841;
- the process of setting a climate target for 2040, taking into account the indicative GHG budget for 2030-2050 to be published by the Commission;
- a commitment to negative emissions beyond 2050;
- the establishment of a European Scientific Advisory Board on Climate Change to provide independent scientific advice;
- stronger provisions on climate change adaptation;
- strong alignment of Union policies with the goal of climate neutrality;
- a commitment to engage with sectors to prepare sectoral roadmaps defining a pathway to climate neutrality in different areas of the economy.[281]

In addition to the EU Climate Act, there are also three main pieces of legislation that are key to the EU's climate objectives and targets: Directive 2003/87/EC of the European Parliament and the Council of 13 October 2003 establishing a GHG emissions trading system within the Union and amending Council Directive

[281] European Climate Law. https://climate.ec.europa.eu/eu-action/european-green-deal/european-climate-law_en

96/61/EC,[282] Regulation 2018/842 on cooperative endeavors[283] and Regulation 2018/841 on land use, land-use change and forestry.[284]

For EU member states, the European Climate Act has been an important signal for them to pursue comprehensive policies and plans to achieve climate neutrality, as well as an important legal basis for their national policies and legislation in this area.

7.1.2 Federal Republic of Germany

Among European countries, Germany is a leader in the development of progressive climate policy and legislation. Over the past two decades, the country has enacted comprehensive climate change legislation that is in line with international and, in particular, EU requirements. In some areas, Germany has played a pioneering role in shaping EU legislation. As an EU member state, Germany was one of the first to initiate efforts to concretize emission reduction commitments under the UNFCCC and in achieving its then-ambitious emission reduction targets.[285]

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[282] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02003L0087-20200101&qid=1616087905524; European Commission. EU Emissions Trading System (EU ETS). https://ec.europa.eu/clima/policies/ets_en

[283] Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by member states from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU), No 525/2013. https://eur- lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018R0842; European Commission. Implementation of the Effort Sharing Decision. https://ec.europa.eu/clima/policies/effort/implementation

[284] Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU), No. 525/2013 and Decision No. 529/2013/EU. https://eur- lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L.2018.156.01.0001.01.01.ENG. See also European Commission. Land use and forestry regulation for 2021-2030. https://ec.europa.eu/clima/policies/forests/lulucf en#tab-0-1

[285] Hans-Joachim Koch Climate Change Law in Germany. Journal European Environmental Planning Law 7-4 (2010), pp. 411-436.

Germany has two main documents that define the country's climate change policy: the Federal Climate Protection Act ("Bundesklimaschutzgesetz" or "KSG")[286] and the Climate Protection Plan 2050.[287]

The Federal Climate Protection Act was adopted on 12 December 2019 and came into force on 1 January 2020. It was amended in June 2021. The aim of the Act is to ensure protection against the effects of climate change by achieving national and European targets. It covers a wide range of climate policies and commitments by setting climate targets and ensuring their fulfilment. The Act is intended to support Germany's commitment at the UN climate summit in New York on 23 September 2019 to achieve neutrality as a long-term goal by 2050. It was passed after the federal government presented its 2030 climate program.

The Act pursues a gradual reduction in GHG emissions from their 1990 levels as follows:

- by at least 65% by 2030;
- by at least 88% by 2040;
- GHG emissions should be reduced to net GHG neutrality by 2045.[288]

After 2050, negative GHG emissions must be achieved.

If higher national climate targets are required to meet European or international climate targets, the federal government should initiate the steps necessary to raise the target values. Climate targets may be raised, but not lowered.[289]

In order to meet national climate targets, the Act provides for the fulfilment of obligations to implement Plan 2050, Germany's national climate strategy adopted on 14 November 2016. In the Act, this document is referred to as the "Climate Change Action Plan", meaning Germany's long-term strategy adopted in accordance with the Paris Agreement and Article 15 of the European Governance Regulation (Art. 2, para. 7).[290]

The Act sets out the issues of increasing mitigation contributions in sectors such as land use, land-use change and forestry, with specific targets in millions of tons of carbon dioxide equivalent by 2030, 2040 and 2045. Responsibility for ensuring

[286] Bundes-Klimaschutzgesetz (KSG). https://www.gesetze-im-internet.de/ksg/BJNR251310019.html

[287] Klimaschutzplan 2050. https://www.bmwk.de/Redaktion/DE/Artikel/Industrie/klimaschutz-klimaschutzplan-2050.html

[288] On 24 June 2021, the Bundestag passed an amendment setting a carbon neutrality target of 2045 instead of 2050.

[289] Bundes-Klimaschutzgesetz (KSG). https://www.gesetze-im-internet.de/ksg/BJNR251310019.html

[290] Ibid.

compliance with these targets rests with the relevant federal ministries within their respective areas of authority (Art. 3a (1-2)).[291]

The Climate Protection Act establishes the Council of Experts on Climate Change (CECC), consisting of five experts from different disciplines. The federal government appoints members for a five-year term, including at least one member each from the fields of climate science, economics, ecology and sociology with outstanding scientific knowledge and expertise in their field. Each member may be reappointed once. The CECC is an independent entity whose activities are financed from the federal budget (Art. 11 (1, 3)).[292] The CECC can also give opinions on updating emission budgets and climate strategy (Art. 11 (4)).[293]

According to the Law, the CECC is charged with examining and evaluating GHG emission data and assessing proposed measures to achieve the GHG emission reduction target. The CECC is empowered to review data from ministries and other government agencies necessary for the fulfilment of its tasks and to hear and question government agencies as well as experts, especially representatives of commercial organizations and environmental associations, on issues related to climate action (Art. 11 (5)).[294]

The Act sets limits on cooperation between the federal government and its states. Without prejudice to compatibility with federal law, the states may adopt their own climate change legislation. Existing climate change legislation of the states shall continue to apply without prejudice to its compatibility with federal law (Art. 14).

German climate policy naturally depends on federal policy. In addition, the sixteen German states and around 15,000 municipalities have considerable political weight. German constitutional law gives the individual states a number of legislative powers in matters relating to climate change and adaptation measures. In addition, the German states have a great deal of responsibility in the area of law enforcement, including with regard to national legislation.[295]

The Climate Protection Plan 2050 summarizes the principles and objectives of the federal government's climate protection policy and describes the pathway towards a largely GHG-free Germany by 2050. It specifies the existing German climate protection target for 2050 and the agreed interim targets, and describes measures to fulfill the Paris Climate Agreement. The 2050 Plan confirms and

[291] Ibid.

[292] Ibid.

[293] Ibid.

[294] Ibid.

[295] Hans-Joachim Koch. Climate Change Law in Germany. Journal European Environmental Planning Law 7-4 (2010), pp. 411-436.

elaborates on the climate targets and introduces a system of guidelines to formulate concrete measures to be taken in all sectors of the economy to fulfill these targets.

With the Climate Protection Plan 2050, the federal government clearly links energy and climate as well as industrial policy and thus offers guidance for all actors in business, science and society.

For the first time in the Climate Protection Plan 2050, this overall goal is broken down into individual economic sectors, with climate goals defined for each. These sectoral targets provide all actors with a clear orientation for strategic decision-making in the coming years.[296]

In October 2019, the German Government decided to implement the 2050 Plan through the Climate Protection Program 2030, which is a supplement to the Plan.[297] According to the Act, in each climate action program the federal government, taking into account the current climate change projection report, must indicate which measures it will take to achieve the national climate goals in the individual sectors (Art. 9 (1)).[298] For example, the Urgent Program for Climate Targets in the Transport Sector adopted in July 2022 aims to make up the difference between previously set targets and actual emissions in the sector in order to meet overall climate goals. About 148 million tons of CO_2 equivalent were emitted in the transport sector in 2021. GHG emissions were about 3 million tons above the annual emissions of 145 million tons of CO_2 equivalent allowed for 2021 under the Climate Protection Act.

The program promotes electric mobility in passenger cars and commercial vehicles. It also promotes the expansion of cycling infrastructure and local public transport. It focuses on:

- developing and expanding fueling and charging infrastructure for passenger cars and commercial vehicles;
- expanding funding for efficient truck trailers;
- the Cycling Infrastructure Initiative – Active Mobility, to strengthen cycling infrastructure programs, including necessary communication and related measures, as well as pedestrianization and other measures;

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296 Klimaschutzplan 2050. https://www.bmwk.de/Redaktion/DE/Artikel/Industrie/klimaschutz-klimaschutzplan-2050.html

297 Регулирование в области изменения климата: мировая практика и перспективы. М., АНО «Центр международных и сравнительно-правовых исследований». 2021. С.76.

298 Bundes-Klimaschutzgesetz (KSG). https://www.gesetze-im-internet.de/ksg/BJNR251310019.html

- expanding and improving the quality of local public transport;
- expanding digital forms of work;
- adaptation of the national GHG emission reduction quota.[299]

7.1.3 Czech Republic

The climate change policy of the Czech Republic is based on the strategy of transitioning to sustainable and low-carbon development. The Czech Republic ratified the UNFCCC in 1992 and subsequently became a party to Annex I of the Kyoto Protocol, which sets emission reduction targets for six major GHGs. As a signatory to the Paris Agreement, the Czech Republic is obliged to contribute to the EU's overall emission reduction target of a 40% reduction in emissions by 2030 (compared to 1990).[300]

Priority measures to combat climate change and its negative effects include:

- GHG emission reductions: the Czech Republic has committed to GHG emission reductions with specific timeframes to 2030, 2040 and 2050;
- improving energy efficiency: the Czech Republic attaches great importance to energy conservation and energy efficiency. There are programs and incentives to improve energy efficiency in buildings, industry and transport;
- renewable energy development: the Czech Republic aims to increase the share of renewable energy in the total amount of energy produced in the country. In this direction, programs have been developed for the development of solar energy, wind energy, hydropower, etc.;
- transport and mobility: the Czech Republic recognizes the importance of reducing GHG emissions in the transport sector. There are measures to develop public transport, introduce electric vehicles and improve infrastructure for bicycles;
- green investments: the Czech Republic encourages green investments and the development of environmentally sustainable projects. There are

[299] Immediate program for compliance with climate targets in the transport sector. https://climate-laws.org/geographies/germany/policies/immediate-program-for-compliance-with-climate-targets-in-the-transport-sector

[300] Vrbová Zuzana, Czech climate policies: are they enough? https://www.ilaw.cas.cz/en/research-and-projects/class/our-comments.html

financial mechanisms and support programs for investments in clean technologies and green enterprises.

These priorities have been translated into relevant national strategies and programs.

In March 2017, the government adopted the **Czech Climate Protection Policy**,[301] which replaced the former National Program for Combating the Effects of Climate Change in the Czech Republic of 2004. The Climate Protection Policy defines the main climate protection objectives at the national level to ensure the fulfilment of GHG emission reduction targets in order to achieve the Czech Republic's international commitments. In addition, it promotes a gradual long-term transition to a sustainable low-emission economy. The policy also sets primary and indicative emission reduction targets to be achieved in a cost-effective manner. Measures are proposed in the areas of energy, final energy consumption, industry, transport, agriculture and forestry, waste, science, research and development and voluntary instruments.[302]

The State Energy Policy of the Czech Republic 2015 establishes objectives regarding energy security, competitiveness and energy balance, which are important for subsequent legislative procedures and investor decisions in the energy sector. Although one of its objectives is also to ensure the sustainability and efficiency of the energy sector, the provisions included in it are rather brief and indicative. The document will be further updated in line with the National Energy and Climate Plan of the Czech Republic.[303]

In October 2015, the Czech Government adopted the **Strategy for Adaptation to Climate Change in the Czech Republic**.[304] This document is a national adaptation strategy and includes an assessment of climate change impacts and proposals for specific adaptation measures, as well as legislative and partial economic analyses. The adaptation strategy is implemented within the framework of the National Action Plan for Adaptation to Climate Change, which was adopted in 2017. This action plan was structured according to the specific impacts of climate change in the Czech Republic, such as long-term droughts, floods and flash floods, extreme meteorological events (heavy rainfall, extreme high temperatures, extreme wind) and wildfires. The Action Plan contains 33 specific objectives and one cross-cutting

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[301] Climate Protection Policy of the Czech Republic. https://www.mzp.cz/en/climate_protection_policy

[302] Climate Policy of the Czech Republic. ttps://www.mzp.cz/en/climate_policy

[303] Vrbová Zuzana, Czech climate policies: are they enough? https://www.ilaw.cas.cz/en/research-and-projects/class/our-comments.html

[304] Strategy on Adaptation to Climate Change in the Czech Republic. https://www.mzp.cz/en/strategy_adaptation_climate_change

objective focused on education and awareness. These objectives will be realized through 52 priority actions that have 160 priority targets.[305]

The main GHG emitters in the country are the traditionally coal-fueled energy sector and energy-intensive industries (as the Czech Republic has a long history of heavy industry). This is why GHG reduction policies are primarily targeted at these two areas. The most important sector for decarburization in the Czech Republic is the energy sector, and in this regard, there is an active public debate about the planned phase-out of coal.[306]

Indeed, the Czech economy is heavily dependent on coal, and nuclear power is seen as an essential part of the transition, utilizing combined heat and power (CHP) and increasing the role of bioenergy in renewable energy production. In this regard, the Czech Coal Commission has recommended a phase-out of coal by 2038. With plans to phase out hard coal and lignite, which account for almost 50% of electricity generation and 60% of heating, it is likely that energy industry emissions will decline in the coming decades.[307]

Czech climate change and energy legislation is based on EU regulations that translate international obligations into European law. Aiming to become climate-neutral by 2050, the EU first adopted a package of climate and energy legislation for 2020 and then a climate and energy framework for 2030. Both of these legislative packages include targets and regulations covering three areas: renewable energy, greenhouse gas emission reductions and energy efficiency. The relevant directives have been transposed into the Czech legal system and national targets have been set.[308]

Over the past two decades, especially after the accession of the Czech Republic to the EU, the government has adopted many legislative acts, such as the Renewable Energy Act, the Act on the Terms and Conditions of Greenhouse Gas Emissions Trading and the Energy Management Act. Furthermore, in 2019, the so-called Coal Commission was established, an advisory body composed of experts whose task is to provide the government with conclusions regarding the future of coal in the Czech Republic and its energy transition.[309] Of particular importance are the Act on the

[305] Climate Policy of the Czech Republic. ttps://www.mzp.cz/en/climate_policy

[306] Vrbová Zuzana Czech climate policies: are they enough? https://www.ilaw.cas.cz/en/research-and-projects/class/our-comments.html

[307] Climate action in Czechia. Latest state of play. https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/689329/EPRS_BRI(2021)689329_EN.pdf

[308] Vrbová Zuzana, Czech climate policies: are they enough? https://www.ilaw.cas.cz/en/research-and-projects/class/our-comments.html

[309] Ibid.

Conditions for Greenhouse Gas Emissions Trading No. 383/2012[310] and the Decree on the Establishment of Application Forms for Allocation of Allowances to Persons Operating Aircraft and Issuance of Permits for Greenhouse Gas Emissions 192/2013,[311] which are based on the EU Directive 2003/87/EC on the Establishment of a Greenhouse Gas Emissions Trading System. The Directive has been amended several times in the third trading period 2013-2020 and the trading system is now defined by Directive 2009/29/EC.[312]

Despite the existence of many strategic and legislative documents aimed at climate change mitigation and adaptation, however, the Czech Republic is still lagging behind in effectively addressing climate change. Amendments and new policies are needed to achieve the transformation of the economy towards a more sustainable model.[313]

The Centre for Climate Law and Sustainability Studies plays an important role in creating more effective climate change policies as well as in promoting research in the area of climate law. The Centre is an expert research unit of the Institute of State and Law of the Czech Academy of Sciences. Launched in 2020, the Centre researches the current challenges and problems that climate change poses to the legal industry at all levels and contributes to their solution in the Czech Republic. One of the most important tasks of the Centre is to assess the current level of implementation of the Czech Republic's climate commitments in legislation and to develop recommendations for future lawmaking.

The aim of the Centre is to systematically develop and cultivate the new discipline of climate law in Czech legal science, to present the results to both legal audiences and the public, to develop interdisciplinary cooperation and to establish contacts and cooperation with other research groups on climate law in Europe.

The Centre focuses on:

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310 Czech Law No. 383/2012 on the Conditions for Trading in Greenhouse Gas Emission Allowances. https://www.mzp.cz/www/platnalegislativa.nsf/%24%24OpenDominoDocument.xsp?documentId=29324B60A8C6D324C1256F86002E6B7D&action=openDocument

311 Decree on the establishment of application forms for the allocation of quotas to aircraft operators and the issuance of permits for greenhouse gas emissions 192/2013. https://www.mzp.cz/www/platnalegislativa.nsf/%24%24OpenDominoDocument.xsp?documentId=0FC2025BF32990E4C1257D8E0037750C&action=openDocument

312 Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. http://data.europa.eu/eli/dir/2009/29/oj

313 Vrbová Zuzana, Czech climate policies: are they enough? https://www.ilaw.cas.cz/en/research-and-projects/class/our-comments.html

- legal instruments for climate change mitigation and adaptation;
- the impact of climate change on human rights;
- developments and current trends in climate justice;
- emissions trading systems;
- legal regulation of energy, technology and transport;
- legal criteria for equity in the transition to a low-carbon economy;
- the relationship between climate protection and environmental protection;
- the impact of climate change on international trade and investment.[314]

At the end of 2022, the Centre published the first collective work: "Climate Law", in Czech, which is the first systematic study in the new field of climate law in the Czech environment (and one of the first in Europe).[315]

7.1.4 Kingdom of Sweden

Swedish national climate change policy is based on Sweden's international commitments under the UNFCCC and the Paris Agreement, UNGA Resolution A/RES/70/1, "Transforming our World: The 2030 Agenda for Sustainable Development", and EU directives and regulations related to climate policy.

Sweden applies policy instruments and measures to mitigate climate change. These include economic instruments (such as CO_2 taxes, subsidies and fines) as well as legal, voluntary agreements and dialogue between government and business.

The Swedish Climate Act was adopted in June 2017 and entered into force on 1 January 2018. The Act is a framework document that obliges the Government to pursue a climate policy aimed at achieving national climate goals.

The Act contains climate policy provisions aimed at zero net GHG emissions by 2045. After 2045, negative net emissions are assumed. With this in mind, the Act contains provisions for the Government to work towards zero net neutrality. It charges the Government with implementing climate policies that (1) aim to prevent dangerous interference with the climate system, (2) help protect ecosystems and present and future generations from the harmful effects of climate change, (3) aim

[314] Müllerová Hana The Centre for Climate Law and Sustainability Studies Launched. https://www.ilaw.cas.cz/en/research-and-projects/class/our-comments.html; Centre for Climate Law and Sustainability Studies (CLASS). https://www.ilaw.cas.cz/en/research-and-projects/class/about.html

[315] H. Müllerová, et al., Klimatické právo. Prague: Wolters Kluwer, 2022.

to reduce emissions of carbon dioxide and other GHGs and maintain and establish facilities in the environment to combat climate change and its adverse effects and (4) are based on evidence and appropriate technically. The government's climate policy efforts should be based on long-term emission targets with timelines set by the Swedish Parliament. The government is also required to submit an annual climate report to Parliament as part of the budget and develop a climate action plan every four years.[316]

In order to implement the Climate Act, **Sweden's Climate Strategy** was adopted in 2018, setting climate change targets and providing concrete measures for mitigation and adaptation to climate change. An **Action Plan** was also adopted in accordance with the Act of 17 December 2019. The Plan sets out specific target reductions for aviation and sea travel, and includes a carbon tax, tax reform that supports climate and environmental goals, a green tax, reductions in the carbon impact of construction in 2022, requirements for all electricity, heating and transport to be emission-free in 2045 and the promoting of private RE projects to make them easier and cheaper. A climate policy framework brings together sectoral strategies, identifying the climate impact on each sector, the proposals and the current or future actions that are or should be taken to achieve climate-related objectives, taking into account the specificities of the sector concerned.

The Swedish Government has taken promotional measures to reduce negative environmental and climate impacts. In the industry sector, for example, the Swedish Government Regulation (2017:1319) on State Support for Measures Contributing to Climate Change in Industry directs the government to provide state support in the form of grants for measures that (1) contribute to the reduction of GHG emissions in industry that have a direct or indirect link to industry processes; (2) contribute to negative emissions through capture, transport and geological storage of GHGs of biogenic or atmospherically derived GHGs; or 3) through the application of new technologies or other innovative solutions in industry, making a significant contribution to the achievement of the environmental quality objective[317]

An important element of the climate policy framework in Sweden is the Climate Policy Council, an independent scientific body whose task is to assess the compatibility of government policies with climate goals and to identify areas where additional measures are needed. The Climate Policy Council prepares annual reports.

316 Swedish climate law. https://climate-laws.org/geographies/sweden/laws/climate-act

317 Ordinance (2017: 1319) on state support for measures that contribute to industry's climate change. https://climate-laws.org/geographies/sweden/policies/ordinance-2017-1319-on-state-support-for-measures-that-contribute-to-industry-s-climate-change

In October 2022, the Swedish Government made a statement in Parliament regarding the transformation of a political agreement into government policy. Among other things, the Statement formally changes Sweden's climate targets from achieving "100% renewable energy" to "100% energy without fossil fuels" so that the government can realize its nuclear ambitions. The commitment to maintain the net zero target for 2045 remains in place.[318]

7.1.5 United Kingdom

United Kingdom (UK) climate policy is underpinned by a range of strategic documents, including the Climate Change Act, the Environment Act, the Critical Minerals Strategy, the Ten Point Plan and the National Adaptation Program.

The UK Climate Change Act was passed in December 2008 and came into force in June 2009. It was amended in June 2019. M. Stollwardy characterized the 2008 Act as a watershed, regulating the formal procedure for sustainable GHG emission reductions. It has provided the basis for the introduction of new legal schemes to address climate change. Whilst the effectiveness of the Act will depend on the extent to which it can withstand breaches and defaults, and how far it can enforce its stated objectives, from the perspective of UK lawyers, the Act is an important piece of legal regulation. All proposals and decisions that affect UK climate change law must be considered from the perspective of the Act. Its significance is seen in the establishment of new obligations that are supported by both institutional structures, procedural measures and reporting obligations that allow for transparency and the assessment of the achievement of objectives.[319]

The Law establishes GHG emission reduction targets and appropriate mechanisms and instruments to achieve such targets. The Climate Change Act originally contained provisions to reduce GHG emissions by at least 80% below the 1990 baseline by 2050. In June 2019, following an amendment to the Act, this target was raised to 100% by 2050. The Act thereby sets a legally binding target for the UK to bring all GHG emissions to net zero by 2050. It also provides for five-year "carbon budgets" to achieve this objective. The UK was the first country to implement legally binding long-term carbon budgets as part of the Climate Change Act 2008.

[318] Sweden. Statement of Government Policy. https://climate-laws.org/geographies/sweden/policies/statement-of-government-policy

[319] Столлуэрди М. Проблемы энергетики и изменения климата. Закон об изменения климата Великобритании. https://cyberleninka.ru/article/n/problemy-energetiki-i-izmeneniya-klimata-zakon-velikobritanii-ob-izmenenii-klimata-statya/viewer

Under the Act, Ministers are required to report on the policies implemented to meet carbon budgets and to submit annual reports to Parliament on the state of UK emissions. The Committee on Climate Change, an independent expert body that advises the government on the level of carbon budgets and on progress to meet them, provides annual reports to Parliament on progress against targets and budgets. The government must respond to these reports, ensuring transparency and accountability.[320]

The Act gives the government powers to introduce domestic emissions trading schemes through secondary legislation and to introduce pilot financial incentive schemes for household waste in the country. The government must report on the risks of climate change at least once every five years and publish a program setting out how these will be addressed. The Act also empowers the government to require public bodies and legal entities to conduct their own risk assessments and draw up plans to address them.

The Act established the Adaptation Sub-Committee of the Committee on Climate Change to advise and monitor the government's work on climate change adaptation. The Fifth Carbon Budget (June 2016) sets emissions reductions at 57% below 1990 levels. It covers the period from 2028 to 2032 and is in line with the UK's global commitments. The Committee on Climate Change has called for all new investments from 2020 in the electricity sector to be low carbon, with the exception of standby and balancing plants. From 2035, the same will apply to all transport investments.

The sixth carbon budget was passed by Parliament on 22 June 2021[321] and includes the country's share of international aviation and shipping emissions while aiming to reduce carbon emissions by more than three quarters on the path to carbon neutrality in 2050.

The UK government has enshrined in the Act its most ambitious target yet: to reduce emissions by 78% by 2035 from 1990 levels. As recommended by the independent Commission on Climate Change, this sixth carbon budget caps the amount of GHGs emitted over a five-year period (2033-2037), putting the UK more than three-quarters of the way towards achieving carbon neutrality by 2050. The Carbon Budget ensures that the country continues to move towards ending its impact on climate change, while remaining in line with the Paris Agreement's

[320] The UK Climate Change Act. https://climate-laws.org/geographies/united-kingdom/laws/climate-change-act-34405aa9-396e-4a78-a662-20cad9696365

[321] Ibid.

temperature target to limit global warming to well below 2°C and continuing efforts to reach 1.5°C.[322]

The government has also laid the foundations for ending the UK's impact on climate change by 2050, starting with ambitious strategies to support the decarburization of polluting industries, grow the economy and create new long-term green jobs. These include the adoption of the Industrial Decarburization Strategy, an ambitious plan to create the world's first low carbon industrial sector, cutting emissions by two thirds in just 15 years, and government funding of over £1 billion to reduce emissions from industries, schools and hospitals.[323]

The policy document "Sustainability for the Future: The UK's 2022 Critical Minerals Strategy" is based on three concepts: accelerate, cooperate and improve. It recognizes the need to improve resilience in the low-carbon transition and ensure a stable supply of essential minerals. It also emphasizes the importance of increasing reuse and recycling systems. One of the policy objectives is to improve global environmental, social and governance performance to enhance overall resilience, reduce vulnerability to disruption and create a level playing field for business.[324]

The UK Zero Emissions Strategy 2022 sets out the government's vision to decarbonize the aviation sector so that the country can meet the zero net carbon target by 2050. It aims to balance regional and international connectivity, economic benefits and GHG reductions, and support sustainable airport growth. As part of the strategy, interim targets and a five-year implementation plan have been issued. Progress will be monitored annually and as part of the five-year major review.

The strategy focuses on technology solutions and the following six measures: system efficiency, sustainable aviation fuel, zero-emission flight, markets and disposal, consumer impacts, and non-CO_2 impacts and potential mitigation. The document aims to support up to 5,200 UK jobs in the aerospace sector.[325]

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[322] UK enshrines new target in law to slash emissions by 78% by 2035. https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035

[323] Ibid.

[324] Policy paper. Resilience for the Future: The UK's Critical Minerals Strategy. https://climate-laws.org/geographies/united-kingdom/policies/resilience-for-the-future-the-uk-s-critical-minerals-strategy

[325] Jet zero strategy. https://climate-laws.org/geographies/united-kingdom/policies/jet-zero-strategy

The Climate Change Act introduced a policy framework for taking forward adaptation action in the UK, consisting of the UK Climate Change Risk Assessment, which is carried out every five years.[326]

The National Adaptation Program is the government's strategy for addressing the key risks and opportunities identified in the risk assessment for England, which is also produced every five years. The first National Adaptation Program was published in July 2013 and the second in 2018. The latest program sets out what the government and other bodies will do over the next five years to be ready for the challenges of climate change. It includes raising awareness of the need to adapt to climate change, improving the evidence base and taking timely action to build resilience to key risk groups.[327]

In Scotland, the Climate Change Act 2009 places a duty on ministers to develop a climate change adaptation program and requires an annual report on progress.[328]

In Wales, the UK Climate Change Act requires Welsh Ministers to prepare reports on the government's objectives, actions and future priorities in relation to the impacts of climate change. The Environment Wales Act 2016 provides a framework for natural resource management and the Well-being of Future Generations Wales Act 2015 aims to improve social, economic, environmental and cultural well-being. Both Acts include provisions relating to climate change adaptation.[329]

In Northern Ireland, the UK Climate Change Act requires the UK Executive to publish a climate change adaptation program.[330]

The UK's Ten Point Plan 2020 focuses on measures to mitigate climate change by reducing GHG emissions and also creates the conditions for adaptation to climate change. As the regime is embedded in existing law and policy, it is assumed that all legal and policy decisions that could affect climate change are now subject to it.

The Ten Point Plan sets out the approach the UK Government will take, which includes (1) improving offshore wind power, (2) increasing growth in low-carbon hydrogen production, (3) getting more nuclear power, (4) moving to zero-emission transport, (5) providing greener public transport, (6) Jet Zero and green ships, (7)

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[326] UK adaptation policy. https://www.theccc.org.uk/preparing-for-climate-change/uk-adaptation-policy/#:~:text=The%20third%20CCRA%20evidence%20report,also%20produced%20every%20five%20years

[327] Ibid.

[328] Ibid.

[329] Ibid.

[330] Ibid.

sustainable infrastructure, (8) introducing carbon capture and storage, (9) protecting nature and biodiversity and (10) green finance.[331]

The Ten-Point Plan is now well underway and has made progress in realizing many of its goals. For example, in relation to the clean transport target, there is a ban on the purchase of new gasoline-powered cars from 2030, a full decade earlier than originally planned. The UK car industry has also received £500 million in funding to improve motorways, major roads and public transport. The Ten-Point Plan has also made progress in improving walking and cycling accessibility across the country. The realization of the importance of sustainable transport has already begun and £2 billion of funding has been allocated to the sector.[332]

The UK Environment Act 2021 is part of a new legal framework to protect the environment as the UK is no longer governed by EU law post-Brexit. The Act gives new powers to set new mandatory targets, including for air quality, water quality, biodiversity and increasing recycling and reducing plastic waste. The Act implements a number of different environmental policies for the Department for Environment, Food and Rural Affairs and sets out the legal framework for significant local authority reforms. The Act also established a new environmental oversight body, the Environmental Protection Authority, which will report to the Government and other public bodies and enforce environmental legislation.[333]

7.2 North American countries

7.2.1 United States of America

The USA is the world's largest economy and remains a major global source of GHG emissions. In 2022, the US accounted for 13.4% of all global GHG emissions. The country's 2019 GHG emissions were about 6.5 billion tons.[334]

US climate legislation encompasses a set of laws, rules and regulations designed to combat climate change, reduce GHG emissions and mitigate negative environmental impacts. It includes both federal and state legislation, as well as regulations developed by local governments. However, the US does not have a comprehensive climate

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[331] What is the Ten Point Plan of the United Kingdom? https://greenly.earth/en-us/blog/ecology-news/what-is-the-ten-point-plan-of-the-united-kingdom

[332] Ibid.

[333] Environment Act, 2021. https://bills.parliament.uk/bills/2593/publications

[334] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019, EPA, p. 36. https://www.epa.gov/climate-indicators/climate-change-indicatorsus-greenhouse-gas-emissions

change bill. A sweeping climate change bill passed by the House of Representatives in 2009 was not subsequently approved in the Senate.[335]

Federal climate legislation in the United States includes legislation such as the Clean Air Act (1970), the Clean Water Act (1972), the Endangered Species Act (1973), the US Environmental Protection Act Species Act (1973), the Resource Conservation and Recovery Act (1976), the Toxic Substances Control Act (1976), the Comprehensive Environmental Protection Act (1976) and the Comprehensive Environmental Response, Compensation, and Liability Act (1980). All of these laws are still in effect, albeit in a somewhat modified form. None of the original laws or subsequent amendments addressed climate change directly. The first US legislation to explicitly mention climate change was the National Climate Program Act of 1978.[336]

In the fight against climate change, the US Government has been actively enforcing the **Clean Air Act of 1970.** The mandatory reporting rules for GHGs under the Act were adopted on 30 October 2009. The Act was amended in 1990, which greatly improved pollution monitoring processes and created economic incentives to reduce air emissions.

The Water Pollution Control Act (Clean Water Act) of 1972 seeks to restore and maintain the chemical, physical, and biological integrity of waters and establishes water pollution control rules and water quality goals.[337]

In 2005, the **US Climate Stewardship and Innovation Act** was passed, which encouraged measures to decarbonize the US economy through the use of GHG trading allowances. It stipulated that organizations with high GHG emissions must hold emission allowances and participate in trading, exchanging, writing off or otherwise using the allowances allowed for trading in accordance with the law.[338]

The US Recovery and Reinvestment Act of 2009 provides a package of measures to encourage and support new and existing renewable energy and energy efficiency programs. The Act provides funding for the implementation of these programs to provide credits for electricity generated from renewable sources and for the purchase and installation of energy efficiency and renewable energy equipment and materials. Specifically, $2.7 billion is provided for the "Energy Efficiency and Conservation

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[335] Kevin R. Gray et al. (eds.), The Oxford handbook of international climate change law. 2016. https://e.mail.ru/newsletters/0:16669759280112312148:500013/#:~:text=Book,2016

[336] Ibid.

[337] Federal water pollution control act (Clean Water Act). https://climate-laws.org/document/federal-water-pollution-control-act-clean-water-act_eb61?q=USA&c=Legislation

[338] Climate Stewardship and Innovation Act of 2005/Congress USA. https://www.congress.gov/bill/109th-congress/senate-bill/1151.

Block Grant Program," funding for energy efficiency and conservation projects and programs through grants to states, territories, local governments, and Native American tribes.[339] More than $110 million in grants have been awarded to the US National Renewable Energy Laboratory to develop wind energy technologies, build new energy efficiency facilities and upgrade the Integrated Research Center, among others.[340]

The Defense Production Act 2050 (**as amended**) was passed in 2018. It mandates that private companies be prioritized to fulfil federal government orders. It states that the nation's security depends on the ability of its industry to supply materials and services, particularly to prepare for natural or man-made disasters. A major component of the industry's strength is domestic energy supply, which, according to the Act, must be enhanced through the use of renewable sources (e.g., solar, geothermal, wind and biomass) and energy conservation measures.[341]

The Innovation and Manufacturing Act of 2020 mandates addressing HFCs by providing new authority in three main areas: phasing down production and consumption of listed HFCs, managing those HFCs and their substitutes and facilitating the transition to next-generation technologies. A 15-year HFC phase-down rule was published in September 2021, establishing baseline levels of HFC production and consumption from which reductions will be made, an initial methodology for allocating and trading HFC allowances for 2022 and 2023, and establishes a robust, dynamic and innovative compliance and enforcement system.[342]

US climate law is constantly changing in response to the political situation and government priorities. It is therefore important to keep up to date with current information and legislative developments in this area.

Under the current administration of US President Joe Biden, steps have been taken to strengthen climate legislation at the federal level. The US has returned to the Paris Climate Agreement and is committed to achieving the goal of limiting global warming to 1.5-2°C. The climate plan calls for the US to become a carbon neutral country by 2050. The plan calls for higher energy efficiency standards, subsidies for clean technologies and $2 trillion in public funding over ten years for

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339 American Recovery and Reinvestment Act. https://climate-laws.org/document/american-recovery-and-reinvestment-act_a29d?q=USA&c=Legislation

340 Ibid.

341 Defense Production Act of 2050 (as amended). https://climate-laws.org/document/defense-production-act-of-2050-as-amended_483d?q=USA&c=Legislation

342 Ibid.

clean energy infrastructure and critical technologies such as green hydrogen.[343] The Office of Domestic Climate Policy Management was established within the Executive Office of the President with a wide range of responsibilities: to coordinate domestic climate policy processes, to advise the president on these issues, to ensure that domestic climate policy decisions and programs are consistent with and effectively achieve the president's stated goals and to oversee the implementation of the president's domestic climate policy agenda.[344]

The US government has also presented a plan for a "clean energy revolution" that envisages 100% CO_2-free electricity generation by 2035.

At the global climate summit in April 2021, the US presented its new climate finance plan and updated NDCs under the Paris Agreement. The document announced targets to reduce GHG emissions by 50 to 52% by 2030.

In November 2021, the **Consolidated Appropriations Act** was enacted to implement the government's main funding scheme and contains numerous climate-related provisions. In particular, the Act encourages the reduction of GHG emissions and promotes RES. It has a section on carbon utilization and sets out processes for assessing the economic, climate and environmental impacts of any integrated national carbon dioxide pipeline system. It directs the Climate Security Advisory Council to develop a study modelled on the advisory council for strategic or transnational threats.[345]

The Infrastructure Investment and Jobs Act of 2021 aims to modernize US infrastructure and improve competitiveness. Specifically, it aims to modernize roads and bridges, expand access to clean drinking water, provide universal access to high-speed internet, combat the climate crisis, promote environmental justice and invest in vulnerable communities.[346]

In August 2022, the **Inflation Reduction Act** was enacted, a wide-ranging effort to reduce inflation, improve public health, invest in manufacturing and domestic energy production to improve security of supply and jobs while reducing carbon emissions and focusing on disadvantaged communities. A key goal of the Act is to reduce energy costs while making cleaner technologies available, which also reduces

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[343] Иэн Пэрри Новый взгляд на климатическую повестку США. https://www.imf.org/ru/Blogs/Articles/2021/03/10/blog-a-new-vision-for-the-us-climate-agenda

[344] Climate Policy Office THE WHITE HOUSE//. https://www.whitehouse.gov/cpo/#:~:text=The%20White%20House%20Office%20of,jobs%2C%20and%20advance%20environmental%20 justice

[345] Consolidated Appropriations Act, 2021. https://climate-laws.org/document/consolidated-appropriations-act-2021_e4a5?q=USA&c=Legislation

[346] Infrastructure Investment and Jobs Act. https://climate-laws.org/document/infrastructure-investment-and-jobs-act_54ba?q=USA&c=Legislation

the future costs of climate inaction. It also invests in a wide range of economic sectors to incentivize their decarbonization efforts and aims to improve rural resilience by supporting climate smart farmland and forestry practices.

The Act is based on a number of tax incentives, grants and subsidies with funding related to climate and energy. Prominent incentives contained in the Act are aimed at encouraging the production and purchase of electric vehicles in the US, solar panel, wind turbine and battery production, carbon capture solutions, green hydrogen production, forest conservation, wildfire protection and energy efficiency in affordable housing. The Act also provides funds for the Environmental Protection Agency to enhance compliance monitoring and "support" enhanced GHG reporting by corporate entities and emission reduction commitments.

The Act contains environmental justice clauses on (1) legacy pollution reduction, (2) affordable and accessible clean energy for disadvantaged communities and (3) better quality of life and good jobs (urban forests, renewable energy and adaptation programs). The Act provides funding to support indigenous communities to address climate change through resilience and adaptation programs, tribal electrification and drought emergency programs. There is also an emphasis on supporting rural and coastal communities.[347]

7.2.2 Canada

Canada's climate laws and policies are driven jointly by the federal and provincial/territorial governments. While they have no direct obligations under the international climate regime, Canada's provinces and territories are taking steps to address climate change. However, the extent to which these efforts reflect international climate law varies considerably.[348]

Canada's climate policy is based primarily on the Clean Growth and Climate Change Framework, which sets climate goals and targets and contains national and sectoral strategies for mitigation and adaptation to climate change. In order to realize these goals and targets, Canada has an extensive climate change regulatory framework aimed at reducing GHG emissions and adapting to climate change. Key legislation in this area includes the Environmental Protection Act, the Clean Air Act,

[347] Inflation Reduction Act. https://climate-laws.org/geographies/united-states-of-america/laws/inflation-reduction-act

[348] Cherie Metcalf Climate law in Canada: International law's role under environmental federalism. University of New Brunswick law journal, 2014, Vol.65, p.86-125 https://cuni.primo.exlibrisgroup.com/discovery/fulldisplay?docid=cdi_gale_infotracmisc_A381835928&context=PC&vid=420CKIS_INST:UKAZ

the Greenhouse Gas Pollution Pricing Act, the Zero Emissions Accountability Act and others.

The Environmental Protection Act 1999 was enacted to replace the corresponding 1988 Act. It establishes a framework for the management and control of toxic substances released at all stages of economic activity, from development, production and transport to distribution, storage, use and disposal. The Act is the responsibility of Environment Canada, and the Department works with Health Canada to assess the toxicity of substances or to develop appropriate regulations and guidelines. The list of toxic substances includes chlorofluorocarbon, methane, nitrous oxide, HFCs and sulfur hexafluoride as GHGs that are subject to regulation.[349]

The major changes included in the Act include pollution prevention measures, the introduction of new procedures to investigate and assess the toxicity of substances, procedures to establish requirements and controls for substances that are toxic or have the potential to become toxic and new provisions on animate products of biotechnology, fuels, international air and water pollution, automobile emissions, the release of nutrients into water bodies that may cause excessive growth of aquatic vegetation and more. The Act was subsequently amended on 26 June 2008 to provide for periodic and comprehensive consideration of the environmental and economic impacts of biofuel production in Canada.[350]

The Clean Air Act of 2007 establishes measures to reduce air pollution and GHGs, setting the target of reducing GHG emissions by 30% below 2005 levels by 2030. The government is also implementing measures to adapt to climate change, including supporting research, development and implementation of adaptation programs. It authorizes the government to regulate air pollution, including indoor and outdoor GHGs and obliges the Ministers of Environment and Health to set and monitor national air quality targets.[351] In addition, **the Canadian Sustainable Development Foundation Technology Act of 2001** establishes a not-for-profit foundation that funds and supports the development and demonstration of clean technologies,[352] while **the Emissions Reduction Incentive Agency Act of 2005**

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[349] The Canadian Environmental Protection Act, 1999. https://climate-laws.org/document/the-canadian-environmental-protection-act-1999-cepa-1999-s-c-1999-c-33_f913?q=Climate+chage+lam+in+Canada&c=Legislation

[350] Ibid.

[351] Canada's Clean Air Act. https://publications.gc.ca/collections/Collection/En84-46-2006E.pdf

[352] Canada Foundation for Sustainable Development Technology Act (S.C. 2001, c. 23). https://climate-laws.org/document/canada-foundation-for-sustainable-development-technology-act-s-c-2001-c-23_5d37?q=Canada&c=Legislation&o=0

establishes the Canadian Emissions Reduction Incentive Agency, which is tasked with developing incentives to reduce GHG emissions.[353]

In order to meet its Paris Agreement commitments, Canada has enacted a suite of programs and legislation to reduce GHG emissions and mitigate climate change. **The 2017 Pan-Canadian Framework for Clean Growth and Climate Change** details the main interconnected pillars as "carbon pricing", "additional measures to reduce emissions", "adaptation", resilience" and "clean technology, innovation and jobs". The document also includes sections on "reporting and oversight and federal government engagement and partnerships with Indigenous Peoples".[354] To achieve the objectives of this Framework Strategy, the 2020 Plan was adopted, which includes five areas in the fight against climate change: reducing energy losses, clean transport, pollution pricing (charges), clean industry and harnessing the power of nature.

The Greenhouse Gas Pollution Pricing Act, 2018 introduces a national pricing system for a wide range of GHG emission sources and amends other legislation accordingly. Under the Act, provinces and territories can either impose their own emissions pricing system or adopt the federal government's system. Provinces and territories that do not impose their own emissions pricing system are subject to the federal government's system, which includes a carbon tax and/or emissions trading.[355]

The Impact Assessment Act 2019 replaces the Canadian Environmental Assessment Act 2012. The Act provides the overall architecture for the federal EIA regime in Canada, expanding its scope to include environmental, social, health and economic aspects. Section 22(1)(b)(i) requires the assessment body to consider the extent to which a project may contribute to or impede the ability of the government of Canada to fulfil its duties and obligations with respect to climate change. Section 63(e) provides that in granting ministerial approval to a designated project, the relevant minister must consider the extent to which the project may contribute to or impede the ability of the government to fulfil its responsibilities and obligations in relation to climate change. In a policy statement in June 2021, the government indicated its

[353] Canada Emission Reduction Incentives Agency Act (S.C. 2005, c. 30, s. 87). https://climate-laws.org/document/canada-emission-reduction-incentives-agency-act-s-c-2005-c-30-s-87_1db8?q=Canada&c=Legislation&o=0

[354] Pan-Canadian Framework on Clean Growth and Climate Change. https://wiki5.ru/wiki/Pan-Canadian_Framework_on_Clean_Growth_and_Climate_Change

[355] Greenhouse Gas Pollution Pricing Act. https://laws-lois.justice.gc.ca/eng/acts/g-11.55/FullText.html

intention to phase out thermal coal mining by 2030 in order to meet the requirements of the Impact Assessment Act to assess the public interest of new projects.[356]

The 2020 Strategic Climate Change Assessment (Revised) provides guidance on conducting assessments. In August 2019, the Impact Assessment Act came into force, establishing a new process for considering the environmental, health, social and economic impacts of projects that will undergo federal impact assessment. One of the factors to be considered in the impact assessment process is the extent to which the effects of a designated project hinder or contribute to the Canadian government's ability to meet its climate change commitments, such as the Paris Agreement, Canada's 2030 goal and Canada's goal of achieving zero emissions by 2050.[357]

The Strategic Climate Change Assessment describes the GHG and climate change information that project proponents must submit at each stage of the federal impact assessment, requires proponents of projects with an implementation date after 2050 to provide a credible plan describing how the project will achieve zero emissions by 2050 and explains how the Canadian Impact Assessment Agency or life cycle regulators, supported by expert federal agencies, will review, comment on and supplement information from the Environment and Climate Change Canada. The agency plans to review and update the Strategic Climate Change Assessment every five years.[358]

The Zero Emissions Accountability Act of 2021 enshrines the Canadian government's commitment to achieve zero GHG emissions by 2050 and establishes an accountability and transparency framework for its implementation. The Act provides a legally binding process for setting five-year national emission reduction targets, as well as developing credible, science-based emission reduction plans to meet each target. The Act sets an GHG emissions target of 40 to 45% below 2005 levels by 2030.[359] It also establishes a requirement to set national emission reduction targets for 2035, 2040 and 2045.

The development of emission reduction plans is envisaged to achieve each target. Each plan shall contain:

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[356] Impact Assessment Act (S.C. 2019, c. 28, s. 1). https://climate-laws.org/document/impact-assessment-act-s-c-2019-c-28-s-1_0677?q=Climate+chage+lam+in+Canada&c=Legislation

[357] Strategic Assessment of Climate Change Revised, October 2020. https://www.canada.ca/en/services/environment/conservation/assessments/strategic-assessments/climate-change.html#toc3

[358] Ibid.

[359] Canadian Net-Zero Emissions Accountability Act. https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050/canadian-net-zero-emissions-accountability-act.html

- GHG emissions target for the year to which the plan relates;
- A summary of Canada's most recent GHG emissions inventory (National Inventory Report) and plan-related information that Canada has submitted as part of its international climate change commitments;
- A description of the key emission reduction measures that the Government of Canada intends to take to meet the target;
- A description of how the plan addresses Canada's international climate change commitments;
- A description of any relevant information.

Taking into account the best available science, the 2030 Emissions Reduction Plan incorporates new measures and strategies across all sectors of the economy and lays out more of the necessary building blocks to develop a strong, sustainable economy, create jobs, and meet Canada's climate goals, while leaving flexibility to adapt to the future.[360]

7.3 Asian countries

7.3.1 People's Republic of China

The People's Republic of China (PRC) is the world's largest GHG emitter, with 12.7 billion tons of CO_2 equivalent in 2019 and a 26% share in global GHG emissions. Between 2005 and 2019, China's GHG emissions increased by 75%, driven by strong economic growth and rising energy demand. In comparison, global emissions grew by 24% over the same period.[361]

The PRC’s climate strategy is articulated in a number of policy documents (including programs, action plans, strategies, etc.) and in national legislation.

China's climate change policy has been in full swing since early 2007 with the implementation of the Eleventh Five-Year Development Plan (2006-2011). During this period, China developed an extensive policy and legislative framework to address climate change. In 2007, the Chinese authorities announced a comprehensive National Climate Change Program for the first time. The report did not establish a

[360] Ibid.

[361] China's climate change policies. State of play ahead of COP27. https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/738186/EPRS_BRI(2022)738186_EN.pdf

new policy, but rather presented a number of existing policies created earlier to address other energy and environmental issues. Nevertheless, it was the first time China formalized these policies in a climate change program.[362] Although the activities of this program have now been completed, the foundations laid out in it continue to shape the overall direction of China's policy in this area.[363]

China has not yet developed a specific framework law that would generally address issues related to climate change measures. At present, the draft national legislation in this area is under active consideration. However, the following laws provide legal regulation of certain issues in the area of climate change:

The Atmospheric Pollution Prevention and Control Act 1987 (amended 29 August 1995, 29 April 2000 and 29 August 2015) aims to "protect and improve the environment, prevent and control atmospheric pollution, protect public health, advance ecological civilization and promote sustainable development of the economy and society" (Art. 1). It calls for comprehensive measures against pollution "caused by coal burning, industrial production, motor vehicles and ships, dust, and agricultural activities" (Art. 2). The purpose of the Act is to limit various sources of atmospheric PT, including "air pollutants and GHGs, including particulates, sulfur dioxide, nitrogen oxides, volatile organic compounds, ammonia, etc." (Art. 2), as well as making information on atmospheric air available to the public.[364]

The Environmental Protection Act, 1989 regulates the protection of the environment, natural resources, protection from pollution and various social relations arising from other types of destructive impacts. In the Act, environmental protection also includes protection of the atmosphere and climate.

The Renewable Energy Law 2006 (amended 2020) sets out the responsibilities of the government, businesses and other users in the development and utilization of renewable energy. It includes measures and targets related to mandatory grid connection, price regulation, differential pricing, special funds and tax incentives, and sets a target of 15% of China's energy production from renewable sources by 2020. The law requires the government to promote and support the application of

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362 Wang, Alex L. Climate Change Policy and Law in China, in The Oxford Handbook of International Climate Change Law, ed. Kevin R. Gray et al., pp. 635-669. https://global.oup.com/academic/product/the-oxford-handbook-of-international-climate-change-law-9780199684601?cc=tr&lang=en&

363 Регулирование в области изменения климата: мировая практика и перспективы. М., АНО «Центр международных и сравнительно-правовых исследований», 2021. С. 186.

364 Law on the Prevention and Control of Atmospheric Pollution 1987. https://climate-laws.org/document/law-on-the-prevention-and-control-of-atmospheric-pollution_d31c?l=china&c=Legislation&q=China

renewable energy in various fields and provides for the establishment of a renewable energy development fund.[365]

The Energy Conservation Law, 2007 aims to strengthen energy conservation, especially for major energy consuming enterprises, and promote the efficient use of energy and the introduction of energy saving technologies. The law requires the government to promote and support the application of RES in various fields.[366]

In addition, China has enacted laws such as the 2008 Circular Economy Development Law, the 2018 Electricity Law and the 2021 Wetland Conservation Law.

China's international commitments under the UNFCCC and the Paris Agreement are generally implemented through national and sectoral development plans, programs and strategies. At present, a number of strategic documents on climate change have been adopted and are being actively implemented.

The National Climate Change Adaptation Strategy, 2013 includes a wide range of measures to protect water resources, minimize soil erosion and enhance disaster prevention, such as early detection and information sharing mechanisms, an ocean disaster monitoring system and coastal restoration. To reduce climate impacts on agriculture, the Chinese government plans to develop new agricultural practices, including measures to control plant-eating pests and increase crop adaptability. The plan also includes weather-based financial instruments such as catastrophe bonds and weather index-based insurance.[367]

The PRC formally unveiled its low-GHG development strategy and updated NDC in October 2021, pledging to achieve carbon neutrality by 2060. By 2030, China aims to reduce carbon intensity by more than 65% from 2005 levels. These targets are supported by China's 2030 Peak Carbon Dioxide Action Plan and the Working Guidelines on Peak Carbon Dioxide and Carbon Neutrality, as well as the 14th Five-Year Plan.

China's 2030 Action Plan ("1+N") aims to peak carbon dioxide emissions by 2030 and eventually achieve carbon neutrality. The plan encompasses two five-year plans (14 and 15) and emphasizes the promotion of innovation in green and low-carbon science and technology, institutional reform in energy and other relevant fields, developing incentives and constraint mechanisms and the need to "avoid

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[365] Renewable Energy Law of the People's Republic of China (Revised). https://climate-laws.org/document/renewable-energy-law-of-the-people-s-republic-of-china-revised_a1ba?l=china&c=Legislation&q=China

[366] Energy Conservation Law 2007. https://climate-laws.org/document/energy-conservation-law_60f1?l=china&c=Legislation&q=China

[367] The National Strategy for Climate Change Adaptation. https://climate-laws.org/geographies/china/policies/the-national-strategy-for-climate-change-adaptation

excessive side effects" of decarburization policies to keep energy security and economic development as the main goal.[368]

The Action Plan aims to strengthen policy support by developing a unified and standardized system for measuring and counting carbon emissions, improving laws, regulations and standards, optimizing economic policy and creating additional market mechanisms. The document also envisages measures to develop wind, solar and nuclear energy through a safe and orderly approach, and the implementation of energy conservation measures.[369]

China's Fourteenth Five-Year Plan 2021-2025 sets out the country's development strategy and paths and specific targets for environmental protection and efficiency. Like previous five-year plans, the Fourteenth Five-Year Plan sets China's climate direction for the five-year period. The plan reaffirms the previously announced goal of achieving carbon neutrality by 2060 and sets a target of peaking emissions in 2030.[370]

7.3.2 Republic of India

To date, India has not enacted a specific climate law. However, India has taken several measures and implemented various policies and regulations to address climate change and promote sustainable development.

In 2008, the Government of India developed the **National Action Plan on Climate Change**, which outlines measures to achieve the country's development goals while providing co-benefits to effectively address climate change. Actions under the National Plan are based on the principle of sustainable development, which, for climate change purposes, means achieving growth while minimizing GHG emissions.[371]

The National Plan outlines a series of steps to simultaneously achieve India's development goals of adaptation and mitigation related to climate change. It is based on eight national missions, which are long-term and integrated strategies to achieve key objectives in the context of climate change: (1) the National Solar Mission, (2)

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[368] Action Plan for Carbon Dioxide Peaking before 2030 (“1+N”). https://climate-laws.org/document/action-plan-for-carbon-dioxide-peaking-before-2030-1-n_ee71?l=china&c=Policies&o=10

[369] Ibid.

[370] 14th Five-Year Plan. https://climate-laws.org/document/14th-five-year-plan_0496?l=china&c=Policies&q=China

[371] Deepa Badrinarayana, Climate Change Law and Policy in India, in The Oxford handbook of international climate change law, ed. Kevin R. Gray et al. 2016, pp. 688-699. https://e.mail.ru/newsletters/0:16669759280112312148:500013/#:~:text=Book,2016

the National Energy Efficiency Mission, (3) the National Sustainable Habitat Mission, (4) the National Water Mission, (5) the National Himalayan Ecosystem Maintenance Mission, (6) the National Green India Mission, (7) the National Sustainable Agriculture Mission and (8) the National Mission on Strategic Knowledge for Climate Change.[372]

The National Action Plan on Climate Change laid the foundation for the preparation and adoption of a number of sectoral projects. An **Integrated Energy Policy** was developed in 2006, addressing all aspects of energy, including energy security, accessibility, availability, affordability and pricing, as well as efficiency and the environment. The policy aims to meet energy demand "at the lowest cost in a technically efficient, economically viable and environmentally sustainable manner". It contains a number of provisions to help prevent GHG emissions. The document also promotes the creation of renewable energy capacity. An Energy Coordination Committee is being established to oversee the implementation of the policy.[373] In 2012, the **National Electricity Development Plan** was adopted, the main objective of which is to ensure reliable access to electricity. The plan contains a special section on GHG reduction initiatives and measures and aims to maintain the reduction of CO_2 intensity and increase electricity generation to meet the needs of a rapidly growing economy. It also calls for the development of RESs, including solar energy, through the mandatory utilization of feed-in, tariff-based renewable energy purchase obligations by utilities.[374]

The National Urban Transport Policy, adopted in 2014, has been extremely important in the fight against climate change. This document aims to provide adequate guidance to Indian cities in order to "achieve comprehensive improvements in urban transport services and infrastructure". The document encourages, among other things, the use of public transport, cycling, walking, energy efficiency and clean fuels to reduce sectoral GHG emissions.[375]

Due to the frequent disasters caused by climate change, **the National Disaster Management Plan** was adopted in 2019 to provide a framework and guidance to government agencies at all stages of the disaster management cycle. In particular, it covers disasters triggered by the effects of climate change. The National Plan has five

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[372] National Action Plan On Climate Change. https://climate-laws.org/document/national-action-plan-on-climate-change_9821?q=India&o=10

[373] Integrated Energy Policy. https://climate-laws.org/document/integrated-energy-policy_9159?q=India&c=Policies

[374] National Electricity Plan (Generation). https://climate-laws.org/document/national-electricity-plan-generation_5260?c=Policies&q=India

[375] National Urban Transport Policy. https://climate-laws.org/document/national-urban-transport-policy_d69c?c=Policies&q=India&o=10

main components: it is in line with national legal mandates, the Disaster Management Act 2005 and the guidance provided in the National Disaster Management Policy; it ensures engagement with global goals in line with the Sendai Framework for Disaster Risk Reduction, SDGs and the Paris Agreement on Climate Change; and the Prime Minister's ten agenda items on the DRR reflect current national priorities.[376]

To fulfill its international obligations under the UNFCCC, the Kyoto Protocol to the UNFCCC and the Paris Agreement, India has enacted a number of environmental laws that directly or indirectly affect climate change measures. These include the following:

The Energy Conservation Act 2001 authorizes the government to issue energy conservation certificates, requires large energy consumers to adhere to energy consumption standards, requires new buildings to comply with energy conservation building codes and requires household appliances to comply with energy efficiency standards and energy labelling. An Energy Efficiency Office has been established to implement the provisions of the Law.[377]

The Electricity Act 2003 aims to better coordinate the development of India's electricity sector. Within the energy sector, the Act provides for the harmonization of laws relating to generation, transmission, distribution, trade and use of electricity, as well as the promotion of competition in the industry and the promotion of efficient and environmentally friendly policies. The Act recognized the important role of RE in the country's national policy, which includes the preparation of a national energy and tariff policy based on optimal utilization of resources such as coal, natural gas, nuclear or materials, hydropower and RE.[378]

The Disaster Management Act 2005 establishes an institutional and coordinating mechanism for effective disaster management at the national, state, district and local levels.

The Compensatory Afforestation Fund Act 2016 establishes a legal framework for compensatory afforestation funds. The Act is based on the concept of net present value, which covers services such as flood control and carbon sequestration. The Act also provides for the establishment of a National Authority for the management and

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[376] India's National Disaster Management Plan. https://climate-laws.org/documents/india-s-national-disaster-management-plan_3168?q=India&o=10

[377] Energy Conservation Act. https://climate-laws.org/document/energy-conservation-act_ce7f?q=India&c=Legislation

[378] Electricity Act 2003. https://climate-laws.org/document/electricity-act-2003_c301?q=India&c=Legislation

planning of the compensatory afforestation fund and defines its composition and powers.[379]

7.3.3 Japan

Japan has an extensive policy and legal framework for environmental protection, in which the proportion of climate change law is steadily increasing. In other words, its origins are formed within the framework of environmental law, and in the near future it may take shape as a special law on climate change. Japan's legislation on environmental protection has been actively developing since the 1940s, and by now encompasses more than 70 normative legal acts.[380] Among them, a number of laws are directly related to climate change issues, which have been continuously improved and amended in the process of mainstreaming the issue.

The first climate-related law that laid the foundation for Japan's energy transition was the 1998 **Law on Promotion of Measures to Combat Global Warming.**[381] At the time of its enactment, this piece of legislation contained provisions that were revolutionary, such as requiring central and regional governments to regularly develop and update emission reduction plans, with specific targets and measures to achieve them.[382] The law initially provided for obligations to establish a Kyoto Protocol Target Achievement Plan in line with emissions reduction commitments.

The Act is one of Japan's two key climate laws, along with the **Energy Conservation Law**. The purpose of the Act is to reduce GHG emissions from anthropogenic activities. The Act establishes the Council of Ministers for Global Environmental Conservation. The Council is chaired by the Prime Minister, with the Chief Cabinet Secretary, the Minister of Environment and the Minister of Economy, Trade and Industry as vice-chairmen. The other members include all ministers except the vice-chairmen.[383] In accordance with the Act, the Global

[379] Compensatory Afforestation Fund Act. https://climate-laws.org/document/compensatory-afforestation-fund-act-act-no-38-of-2016_1599?q=India&c=Legislation

[380] Official website of the Ministry of the Environment of Japan. https: www.env.go.jp/en/laws/index.html

[381] Act on Promotion of Global Warming Countermeasures (Law No. 117 of 1998) https://climate-laws.org/document/act-on-promotion-of-global-warming-countermeasures-law-no-117-of-1998_c497?l=japan&c=Legislation&o=10

[382] Мастепанов А.М., Сумин А.М., Чигарев Б.Н. Энергетическая политика Японии в контексте энергетического перехода и «санкционных войн». Актуальные проблемы нефти и газа. Вып. 3(38) 2022. С. 64.

[383] Act on Promotion of Global Warming Countermeasures (Law No. 117 of 1998). https://climate-laws.org/document/act-on-promotion-of-global-warming-countermeasures-law-no-117-of-1998_c497?l=japan&c=Legislation&o=10

Warming Action Plan was adopted in May 2016, which stipulates the measures to be taken by the central and regional governments and also lays down the criteria to guide the business sector and citizens in their daily activities in order for the country to meet the climate targets for 2020 and 2030 respectively. It clearly states the goal of achieving the medium-term target set in Japan's NDC (2015) of reducing GHG emissions by 26% by 2030 (2013 baseline). In addition, the Plan also sets a long-term goal of reducing GHG emissions by 80% by 2050.

In December 2020, based on the announced target, the government of Japan presented a Green Growth Strategy to achieve carbon neutrality in 2050. In this regard, on 4 June 2021, the Diet approved Law 54/2021, amending Law 54/2021, which introduces the net-zero target by 2050 into legislation.[384]

Additional legislation that contributes to measures to combat the effects of climate change includes:

The Basic Environmental Protection Act of 1993, which enshrines the advancement of environmental conservation policies to ensure a healthy and cultured life for both present and future generations of the nation. It articulates basic principles, clarifies the responsibilities of the state, local governments, corporations and citizens, and spells out the major policy considerations for environmental conservation.[385]

The 1979 Energy Management Act is the foundation of Japan's energy conservation policy and also one of its two key climate laws. It was enacted after the oil crisis of the 1970s to promote the efficient and rational use of energy. The subjects of the Act's legal regulation are energy management in the industrial, commercial, residential and transport sectors as well as energy efficiency standards for vehicles and appliances. The Act covers energy derived from oil, natural gas, coal, heat (of fossil origin) and other energy sources. Electricity derived from RES is not subject to this Act.[386]

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[384] Ibid.

[385] Basic Environment Law (Law No. 91 of 1993). https://policy.asiapacificenergy.org/node/2633#:~:text=91%20of%201993),-Meta%20Data&text=Overall%20Summary%3A,future%20generations%20of%20the%20nation.

[386] Law Concerning the Rational Use of Energy (Energy Conservation Act) (Law No. 49 of 1979). https://climate-laws.org/document/law-concerning-the-rational-use-of-energy-energy-conservation-act-law-no-49-of-1979_2dff?l=japan&c=Legislation&o=10

The Petroleum Alternative Energy Promotion Act 1980 aims to implement measures for the development and introduction of alternative energy sources to petroleum, including RESs.[387]

The Basic Law on Energy Policy and its Strategic Plans of 2002 defines the main and general directions of the country's energy policy and establishes the principles of using market mechanisms to incentivize a reliable and more environmentally friendly energy supply. It stipulates the responsibility of the state to establish comprehensive energy plans (Strategic Energy Plan or Basic Energy Plan) and make commitments to reduce environmental impacts. The role of sub-national governments is to implement national measures within their jurisdiction.

The Strategic Energy Plan defines the main energy measures and the research and development necessary to achieve the above objectives. Promoting a sustainable energy supply structure and increasing the self-sufficiency of energy supply are emphasized as national energy policy interests.[388]

The 1997 Law on Special Measures to Encourage the Use of New Energy (amended 13 June 2014) aims to accelerate the introduction of new energy and provides financial support measures for utilities that utilize it. New energy is non-fossil energy as defined in the Petroleum Alternative Energy Promotion Act of 1980.[389]

Climate protection lawmaking in Japan has become particularly prominent in the last ten to twelve years, especially since the country's commitments under the 2015 Paris Agreement. These include the following laws:

In 2011, the **Law on Electricity Procurement from Renewable Energy Sources by Utility Organizations** was adopted, which introduced a system of feed-in tariffs for RES and a carbon tax system. The carbon tax is designed to help reduce GHG emissions and builds on the existing tax regime on oil and coal imports. The introduction of a carbon tax is one of the points of the Tax Reform Law of 2012.[390]

An Act to partially amend the Special Tax Measures Act (Tax Reform Act 2012). Part of the tax reform implemented by this Act is the introduction of a carbon tax

[387] Law Concerning the Rational Use of Energy (Energy Conservation Act) (Law No. 49 of 1979). https://climate-laws.org/document/law-concerning-the-rational-use-of-energy-energy-conservation-act-law-no-49-of-1979_2dff?l=japan&c=Legislation&o=10

[388] Fundamental Law on Energy Policy (Basic Act on Energy Policy) and its Strategic Plans (Law No. 71 of 2002). https://climate-laws.org/document/fundamental-law-on-energy-policy-basic-act-on-energy-policy-and-its-strategic-plans-law-no-71-of-2002_e50c?l=japan&c=Legislation&o=10

[389] Climate change legislation in Japan.

[390] Ibid.

from October 2012 to mitigate climate change. This tax builds on the previous tax regime for crude oil, gaseous hydrocarbons and coal.[391]

The 2013 Basic Law on National Resilience, Contributing to the Prevention and Mitigation of Emergency Situations to Build Resilience of Citizens defines the government's responsibility to make the country more resilient to large-scale disasters. The law defines the basic legal principles of resilience and obliges the government to develop measures to implement resilience initiatives. It also provides for the creation of a Fundamental Plan for National Resilience that defines policies and strategies for resilience.[392]

The Promotion of Renewable Energy Electricity Generation in Harmony with Rational Development of Agriculture, Forestry and Fisheries Act 2014 aims to "rejuvenate rural areas" by promoting renewable energy generation in harmony with the rational development of agriculture, forestry and fisheries.[393]

The Low Carbon City Development Act 2014 aims to establish a system of low-carbon buildings that contribute to the reduction of CO_2 emissions in cities, and to give preferential treatment to buildings with high valuation efficiency through incentives such as tax reductions. Local authorities are required to produce a Low Carbon City Plan and the government is required to provide financial support to them that are committed to creating a compact, energy efficient city.[394]

The Building Energy Performance Improvement Act of 2015 provides regulatory measures for mandatory compliance with energy efficiency standards for large non-residential buildings and incentives such as a labelling system to demonstrate compliance with energy efficiency standards and the elimination of floor area ratio regulations for certified buildings. The law describes the energy efficiency standards and labelling system in more detail.[395]

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[391] Ibid.

[392] Basic Act for National Resilience Contributing to Preventing and Mitigating Disasters for Developing Resilience in the Lives of the Citizenry, 2013. https://climate-laws.org/document/basic-act-for-national-resilience-contributing-to-preventing-and-mitigating-disasters-for-developing-resilience-in-the-lives-of-the-citizenry_c791?l=japan&c=Legislation

[393] Act on Promoting Generation of Electricity from Renewable Energy Sources Harmonized with Sound Development of Agriculture, Forestry and Fisheries. https://climate-laws.org/document/act-on-promoting-generation-of-electricity-from-renewable-energy-sources-harmonized-with-sound-development-of-agriculture-forestry-and-fisheries_d7d6?l=japan&c=Legislation

[394] Low Carbon City Promotion Act (Eco-city Law) (Law No. 84 of 2014). https://climate-laws.org/document/low-carbon-city-promotion-act-eco-city-law-law-no-84-of-2014_c80a?l=japan&c=Legislation

[395] Act on the Improvement of Energy Consumption Performance of Buildings. https://climate-laws.org/document/act-on-the-improvement-of-energy-consumption-performance-of-buildings_27ec

The Climate Change Adaptation Act 2018 aims to boost adaptation efforts and consolidates the 2015 NAP, setting out updated commitments. It obliges authorities to take effective measures in various areas based on "sound scientific information" and encourages international cooperation and the involvement of private organizations in adaptation efforts. Municipalities must develop local climate change adaptation plans.[396]

The Law on the Promotion of Environmental Mitigation Activities for the Creation of Environmentally Harmonized Food Systems 2020 sets out the basic principles for the creation of a food system harmonized with the environment. It aims to promote the sustainable development of agriculture, forestry, fisheries and food industry, while ensuring a stable food supply for the population.[397]

7.4 Post-Soviet countries

7.4.1 Russian Federation

The Russian experience of legal regulation to counteract to climate change supports international legal cooperation, but these issues are not sufficiently reflected in the legislation. Problems related to climate change are mainly addressed at the level of political statements and the introduction of environmental technologies.[398] The legal framework for Russia's mitigation policy is fragmented and largely driven by interests other than environmental protection. Historically favorable trends in GHG emissions have contributed to this approach.[399]

The climate policy of the Russian Federation places more emphasis on the adoption of political documents (strategies, doctrines, concepts) than legal ones. However, they are de facto declarations of certain principles and do not imply any

[396] Climate Change Adaptation Act 2018. https://climate-laws.org/document/climate-change-adaptation-act_23ed

[397] Law No. 37/2022 concerning the Promotion of Environmental Burden Reduction Activities for the Establishment of Environmentally Harmonized Food Systems. https://climate-laws.org/geographies/japan/laws/law-no-37-2022-concerning-the-promotion-of-environmental-burden-reduction-activities-for-the-establishment-of-environmentally-harmonised-food-systems

[398] See, for example, the project «Климатически нейтральная хозяйственная деятельность: внедрение наилучших доступных технологий (НДТ) в Российской Федерации». http://www.good-climate.com/content/ru/news.php?nid=1; Солнцев А.М. 2018. Изменение климата: международно-правовое измерение. Московский журнал международного права. No. 1. С. С.72-75.

[399] Anna Korppoo, Max Gutbrod and Sergey Sitnikov, Russian Law on Climate Change, in The Oxford handbook of international climate change law, ed. Kevin R. Gray et al., 2016, pp. 700-723. https://e.mail.ru/newsletters/0:16669759280112312148:500013/#: ~:text=Book,2016

legal obligations towards the authorities. Rather, the task of these documents has been to determine the general tone in approaches to the country's climate policy.[400]

The implementation of a unified state policy for the Russian Federation on issues related to climate change and its consequences is enshrined, first of all, in the **Climate Doctrine of the Russian Federation, adopted on 17 December 2009.** Its strategic goal is to ensure the safe and sustainable development of the Russian Federation. The Doctrine concentrates maximum efforts on reducing anthropogenic GHG emissions and increasing their absorption through sinks and storages. To this end, it envisions implementing measures to ensure the improvement of energy efficiency in all sectors of the economy, as well as the development of renewable and alternative energy sources, the reduction of market imbalances, the implementation of financial and tax policy measures stimulating reduction of anthropogenic GHG emissions and the protection and improvement of the quality of GHG sinks and storages, including rational forestry.

One of the main directions of Russia's national climate policy is the development of the legal and regulatory framework and organization of the state regulation of climate change.[401] In April 2011, the Russian Government approved a plan for the implementation of the Climate Doctrine until 2020, according to which Russia committed itself to implementing a comprehensive climate policy, including measures to adapt to climate change, mitigate anthropogenic impacts on the climate and strengthen international cooperation in this area.

The Doctrine of Energy Security of the Russian Federation 2019 is a strategic planning document to ensure the country's national security. The Doctrine provides for the intensification of international efforts to implement climate policy and accelerate the transition to a "green economy". It emphasizes Russia's readiness to support international efforts aimed at combating climate change and participate in resolving international climate policy issues to the extent that this policy meets its national interests.[402]

The Energy Strategy of the Russian Federation until 2035 has the goal of maximizing support for the country's socio-economic development, strengthening and preserving Russia's position in the global energy sector at least for the period until 2035. The main focus is on improving energy efficiency. It is assumed that, by

[400] Ibid.

[401] Climate Doctrine of the Russian Federation. approved by the order of the President of the Russian Federation dated 17 December 2009. https://rulaws.ru/president/Rasporyazhenie-Prezidenta-RF-ot-17.12.2009-N-861-rp/

[402] Decree 216/2019 approving the Energy Security Doctrine. https://climate-laws.org/document/decree-216-2019-approving-the-energy-security-doctrine_24f3?q=Russian&o=10

the end of the third stage, Russia will move to the highly efficient use of traditional energy types and will be ready for transition to alternative energy.[403]

The Strategy of socio-economic development of the Russian Federation with a low level of GHG emissions until 2050 defines measures to ensure that, by 2030, GHG emissions are reduced to 70% of the 1990 level, taking into account the maximum possible absorption capacity of forests and other ecosystems and subject to the sustainable and balanced socio-economic development of the Russian Federation. The Strategy also defines directions and measures for low-GHG emission development until 2050. Its priority during the period from 2021 to 2050 is to reduce the accumulated volume of net GHG emissions in the Russian Federation to lower values compared to the EU indicators, which will contribute to keeping the increase in global average temperature well below 2°C above pre-industrial levels while making efforts to limit the temperature increase to 1.5°C.[404]

The National Action Plan for the Implementation of the First Phase of Adaptation to Climate Change 2019 defines the economic and social measures implemented by the executive authorities to reduce the vulnerability of Russia's population, economy and natural objects to the effects of climate change, as well as to utilize the opportunities arising from such changes. The National Plan is the first stage of measures to adapt the economy and population to climate change and includes institutional, organizational and methodological measures aimed at forming state approaches to climate change adaptation.[405]

The concept of formation of the system of monitoring, reporting and verification of GHG emissions volume in the Russian Federation, approved by the Order of the Government of the Russian Federation dated 22 April 2015 (amended 30 April 2018), ensures the preparation of an inventory of anthropogenic emissions from sources and absorption by sinks of GHGs and the fulfilment of the obligations of the Russian Federation to submit the required reporting to the authorized bodies of the UNFCCC and the Kyoto Protocol.[406]

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[403] The Energy Strategy until 2035 was approved by the Russian Government Order No. 1523-r on 9 June 2020.
https://www.eprussia.ru/upload/iblock/2b6/2b6966bd7674bf2e4273d6b36eba75cc.pdf

[404] Strategy of socio-economic development of the Russian Federation with low greenhouse gas emissions until 2050. https://climate-laws.org/document/strategy-of-socio-economic-development-of-the-russian-federation-with-low-greenhouse-gas-emissions-until-2050_9c6b?q=Russian

[405] National Action Plan for the First Phase of Adaptation to Climate Change, approved by Order of 25 December 2019, No. 3183-r. 3183-r. https://climate-laws.org/document/national-action-plan-for-the-first-phase-of-adaptation-to-climate-change-approved-by-order-of-december-25-2019-no-3183-r_2882?q=Russian&o=30

[406] Decision 716-r to approve the Concept of Forming a System for Monitoring, Reporting and Verification of Greenhouse Gas Emissions in the Russian Federation. https://climate-

Russia does not yet have a comprehensive climate law; these issues are generally the subject of subordinate legislation and are enforced through extensive bylaws.

One of the areas in which Russia has made significant progress is energy efficiency. On 27 November 2009, the **Law "On Energy Saving and Energy Efficiency Improvement"** was adopted. The Law is aimed at adopting new measures for energy saving and increasing energy efficiency, as well as creating a legal, organizational and economic basis for stimulating energy savings and increasing energy efficiency. Under the Law, all energy resources produced, transmitted and consumed are subject to mandatory metering. It establishes a general rule that buildings and other structures must meet applicable energy efficiency requirements.[407]

Among the normative acts on energy savings is also the **Decree of the President of the Russian Federation adopted in June 2008**; it sets the goal of reducing the energy intensity of the Russian economy by 40% between 2007 and 2020.[408]

The period after Russia's accession to the Kyoto Protocol of the UNFCCC was the most fruitful in terms of the development of the legal framework for the regulation of GHG emissions at the national level.[409] In particular, during this period Russia adopted a number of bylaws, including the Resolution of the Government of the Russian Federation of 15 September 2011 "On Measures to Implement Article 6 of the Kyoto Protocol to the UNFCCC",[410] the Order of the Ministry of Economic Development of Russia of 30 July 2010 "On Approval of the Procedure for Maintaining the Register of Projects Implemented in Accordance with Article 6 of the Kyoto Protocol to the UNFCCC" and the Order of the Ministry of Industry and Energy of Russia of 22 January 2008 "On Organization of Review and Verification of the Implementation of Projects Implemented in Accordance with Article 6 of the Kyoto Protocol to the UNFCCC".

laws.org/document/decision-716-r-to-approve-the-concept-of-forming-a-system-for-monitoring-reporting-and-verification-of-greenhouse-gas-emissions-in-the-russian-federation_377a?q=Russian; Концепции формирования системы мониторинга, отчетности и проверки объема выбросов парниковых газов в РФ. https://rulaws.ru/goverment/Rasporyazhenie-Pravitelstva-RF-ot-22.04.2015-N-716-r/

407 Federal Law 261-F3 on Saving Energy and Increasing Energy Efficiency Increase. https://climate-laws.org/document/federal-law-261-f3-on-saving-energy-and-increasing-energy-efficiency-increase_e7e2?q=Russian&c=Legislation

408 Decree of the President of the Russian Federation No. 889 of 4 June 2008 "On Measures to Increase Energy and Environmental Efficiency of the Russian Economy."

409 See Климат планеты в фокусе права. Журнал российского права. 2016. No. 9. С. 157-160.

410 Resolution of the Government of the Russian Federation of 15 September 2011 No. 780 "On measures to implement Article 6 of the Kyoto Protocol to the UN Framework Convention on Climate Change". Collection of Legislation of the Russian Federation. 2011. No. 39. Art. 5486

The main legal elements of institutional compliance with the Kyoto Protocol included requirements to submit an annual inventory of GHG emissions in accordance with IPCC recommendations, and to establish a registry to account for domestic emissions.

On the basis of the Order of the Government of the Russian Federation dated 8 January 2009 (edited 24 March 2022), the "Main directions of the state policy in the sphere of increasing the energy efficiency of the electric power industry based on the use of renewable energy sources for the period up to 2035" were approved. The document includes a set of measures aimed at creating conditions to stimulate the development of the use of RES for electricity generation. For the period up to 2035, it is planned to set at least 6% of the target indicators for the volume of electricity production and consumption using RES (except for hydroelectric power plants with an installed capacity of more than 25 MW).[411]

Russia has taken a number of measures to combat climate change aimed at achieving progress in reducing GHG emissions. In particular, according to the **Presidential Decree "On Reducing Greenhouse Gas Emissions" adopted 30 September 2013.** The government of the Russian Federation was instructed to ensure that by 2020 the volume of GHG emissions is reduced to no more than 75% of the volume of said emissions in 1990, as well as to adopt an action plan to ensure the established volume of GHG emissions, providing for the development of GHG emission reduction indicators by economic sector.[412] In accordance with this Decree, the government of the Russian Federation approved an action plan to ensure the reduction of GHG emissions by 2020.[413] To achieve this, it was planned that, by 2020, the regulatory and legal framework for the introduction and operation of a system for the monitoring, reporting and verification of GHG emissions in the Russian Federation would be fully formed. However, neither the provisions of the Climate Doctrine, nor the Decrees of the President of the Russian Federation pertaining to this have been fully implemented since then. The Decree "On limiting

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[411] Main directions of the state policy in the sphere of increasing the energy efficiency of the electric power industry on the basis of the use of renewable energy sources for the period up to 2035. Approved by the order of the Government of the Russian Federation from 8 January 2009 N 1-r. https://rulaws.ru/goverment/Rasporyazhenie-Pravitelstva-RF-ot-08.01.2009-N-1-r/

[412] Decree of the President of the Russian Federation "On Reduction of Greenhouse Gas Emissions" of 30 September 2013, No. 752. https://rulaws.ru/president/Ukaz-Prezidenta-RF-ot-30.09.2013-N-752/

[413] Order of the Government of the Russian Federation No. 504-r of 2 April 2014. "On Approval of the Action Plan to Ensure Reduction of Greenhouse Gas Emissions to the Level of No More than 75 Percent of the Volume of Such Emissions in 1990 by 2020". Collection of Legislation of the Russian Federation. 2014. No. 15. Art. 1778.

greenhouse gas emissions" for this very reason did not become the Climate Law of the Russian Federation, but only a part of the future projected climate legislation.[414]

In addition, the Presidential Decree of 4 November 2020 was adopted; **"On reduction of greenhouse gas emissions"** ensures:

- that, by 2030, GHG emissions will be reduced to 70% of the 1990 level, taking into account the maximum possible absorption capacity of forests and other ecosystems and subject to the sustainable and balanced socio-economic development of the Russian Federation;
- the development and approval of the Strategy for Socio-economic Development of the Russian Federation with low GHG emissions until 2050 (taking into account the specifics of economic sectors);
- the creation of the conditions for the implementation of measures to reduce and prevent GHG emissions, as well as to increase the absorption of such gases.[415]

7.4.2 Republic of Kazakhstan

At present, the Republic of Kazakhstan has not yet adopted a single, unified law on climate protection, which would create a legal framework for addressing climate change issues at the national and local levels. Measures aimed at combating climate change in the country address individual issues at the level of various normative legal acts. Kazakhstan's climate legislation includes a number of laws and bylaws aimed at regulating and supporting measures to reduce GHG emissions, adaptation to climate change and RES development. The country's legislation is constantly being improved and supplemented to ensure effective implementation of climate policy and to meet the challenges of climate change.

The basis for the development of climate legislation is formed by strategic documents (programs, concepts, etc.) of both a general and a specific nature. These include the following documents:

The 2013 Green Economy Transition Concept sets ambitious targets for increasing the share of alternative (including nuclear) energy in the energy mix: 30%

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[414] Жаворонкова Н. Г., Агафонов В. Б. Климатическое законодательство Российской Федерации: возможности и потенциал в условиях энергетического перехода Lex russica. 2022. Т. 75. No. 1. С. 32-33.

[415] Decree of the President of the Russian Federation of 4 November 2020. "On Reduction of Greenhouse Gas Emissions". http://www.kremlin.ru/acts/bank/45990

in 2030 and 50% in 2050, while maintaining existing levels of coal production. The Vision focuses on five key areas related to climate change:

- greening of the power sector: conversion of generating capacities from coal to gas combined with a significant increase in the share of alternative energy sources;
- improving energy efficiency in the manufacturing industry: metallurgical, chemical, mining, food, pulp and paper, construction and machine building industries;
- improving energy efficiency in the transport sector;
- improving energy efficiency in the heat supply sector: improving the efficiency of boiler houses, reducing losses in district heating networks and energy saving measures in buildings;
- sustainable agriculture based on improved water use efficiency and land productivity.[416]

The Fuel and Energy Complex Development Concept for 2023-2029 envisages the development of the oil and gas, coal, nuclear and electricity industries, which will have direct and indirect effects on emission reductions.[417]

The Strategic Development Plan until 2025 is a document of the first level of the state planning system and is designed to implement the long-term Development Strategy of Kazakhstan by 2050. The document reaffirms the country's commitment to its commitments under the NDC, which envisages a 15% reduction in GHG emissions by 2030, and recommends revising the 2013 Concept for Transition to a Green Economy to ensure conditions for such a reduction.[418]

Currently, by the **Decree of the President of the Republic of Kazakhstan dated 2 February 2023 "On Approval of the Strategy for Achieving Carbon Neutrality of the Republic of Kazakhstan until 2060"**, Kazakhstan has set an ambitious goal to achieve carbon neutrality by 2060. Achievement of this goal will be ensured

[416] Decree of the President of the Republic of Kazakhstan of 30 May 2013 No. 577. "On the Concept on the transition of the Republic of Kazakhstan to the "green economy". https://adilet.zan.kz/rus/docs/U1300000577

[417] Resolution of the Government of the Republic of Kazakhstan of 28 June 2014 No. 724. "On Approval of the Concept of Development of Fuel and Energy Complex of the Republic of Kazakhstan for 2023 – 2029". https://adilet.zan.kz/rus/docs/P1400000724

[418] Decree of the President of the Republic of Kazakhstan of 15 February 2018 No. 636 "On approval of the National Development Plan of the Republic of Kazakhstan until 2025 and invalidation of some decrees of the President of the Republic of Kazakhstan". adilet.zan.kz/rus/docs/U1800000636

through the integrated implementation of a low-carbon policy and the application of sectoral (energy, industry, agriculture and forestry, waste management) and cross-cutting approaches (just transition, green finance, research and development and education, public awareness, international cooperation, adaptation to climate change, carbon regulation system).[419] Carbon credits have already been allocated to the most carbon-intensive industries in the country, and a mechanism for regulating GHG emissions and removals in Kazakhstan has been established.[420]

The updated NDC envisages a 25% reduction in GHG emissions by the end of 2030 relative to the base year 1990 emissions level, subject to significant additional international investment and grant assistance, access to an international technology transfer mechanism, co-financing and participation in international research and development projects, including promising low-carbon technologies and initiatives to build local expertise.[421]

As for the legislation of the Republic of Kazakhstan, it contains, as mentioned above, separate provisions related to climate change issues. Let us consider the main laws in this area:

The 2009 Law on Support for the Use of Renewable Energy Sources regulates the development and utilization of RES in the country, including solar, wind and hydropower. It is aimed at removing previous legal and financial barriers to the development of renewable energy projects, which facilitates the implementation of new projects and access to regional energy grids; it also regulates energy pricing, ensuring that the cost of energy from renewable sources is comparable to fossil fuels. The law provides a legal basis for the development of national and regional programs for the use of RES.

The Law requires that, by 2024, 5% of Kazakhstan's total energy consumption must come from renewable sources.[422]

The 2011 Energy Conservation Law establishes the legal framework for the regulation of markets related to energy consumption. It clarifies that the state has

[419] Decree of the President of the Republic of Kazakhstan of 2 February 2023, No. 121. "On Approval of the Strategy for Achieving Carbon Neutrality of the Republic of Kazakhstan until 2060". https://adilet.zan.kz/rus/docs/U2300000121

[420] Kazakhstan has introduced carbon crediting. https://www.sgs.com/ru-kz/news/2023/01/v-kazakhstane-vnedreno-uglerodnoe-kvotirovanie

[421] Resolution of the Government of the Republic of Kazakhstan of 19 April 2023 No. 313. "On Approval of the Updated National Contribution of the Republic of Kazakhstan to the Global Response to Climate Change". https://adilet.zan.kz/rus/docs/P2300000313

[422] Law about Support of Use of Renewable Sources of Energy No. 165-4 Kazakhstan, 2009. https://climate-laws.org/document/law-about-support-of-use-of-renewable-sources-of-energy-no-165-4_6b84?l=kazakhstan&c=Legislation

the right to regulate markets in accordance with the principles of energy saving and energy efficiency. The law authorizes and obliges local and regional executive authorities to develop and approve energy saving programs and to conduct scientific research into energy efficiency. Funds to finance such programs and studies must be allocated from the national budget. The government is authorized to establish minimum energy efficiency indicators for mechanical equipment, buildings and structures that consume additional fuel.[423]

The Electricity Act 2004 provides broad directives on the management of the country's energy resources, electricity distribution and energy priorities. It establishes a list of priorities for future electricity regulation and policy. Among these priorities are the development of renewable energy resources and the rational and efficient utilization of existing sources. The law empowers the government to develop and implement policies in accordance with the framework set out therein, allowing climate change policies to be implemented without discussion and approval in the legislature.[424]

The 1997 Law on Civil Defence defines the issues of forecasting emergencies and disasters, developing response plans and implementing disaster prevention measures. The law also defines various classifications of emergencies in Kazakhstan, gives the President the authority to declare a state of emergency and requires all subnational and local governments to establish and operate emergency response systems.[425]

The 1993 Law Defining the Legal Conditions for the Prevention and Elimination of Emergency Situations defines the state of emergency in Kazakhstan, as well as the procedure for its introduction. It also specifies the role of the state in disaster risk management during a state of emergency and obligates the state to compensate for losses and damages caused by natural disasters.[426]

The 1996 Law on the Elimination of Consequences of Natural and Technogenic Emergencies defines the general framework for DRM in Kazakhstan. Among the most important provisions of the law are the requirement for the national government and all private organizations to develop DRM and response measures,

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[423] Law on Energy Saving Kazakhstan, 2011. https://climate-laws.org/document/law-on-energy-saving_ddeb?l=kazakhstan&c=Legislation

[424] Law on Power Industry, No 588-II Kazakhstan, 2004. https://climate-laws.org/document/law-on-power-industry-no-588-ii_ccc4?l=kazakhstan&c=Legislation

[425] Civil Defense Law Kazakhstan, 1997. https://climate-laws.org/document/civil-defense-law_3162?l=kazakhstan&c=Legislation

[426] Law providing for legal conditions of disaster management Kazakhstan, 1993. https://climate-laws.org/document/law-providing-for-legal-conditions-of-disaster-management_5641?l=kazakhstan&c=Legislation

and the definition of the government's authority in DRM, including the development of policies, regulations and instructions.[427]

The Law "On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on the Transition to a Green Economy" 2016 is of exceptional importance. The Law amends the Land, Water, Environmental, Tax and Entrepreneurship Codes to introduce or strengthen sustainable practices (e.g., updated protection of the environment and natural resources, extended producer responsibility, improved water consumption standards and sustainable waste management). In the part directly related to climate change, the Law supplements the Law on Support for the Use of RES with amendments aimed at supporting renewable energy, establishing a renewable energy reserve fund and improving mechanisms for connecting renewable sources to the national electricity grid.[428]

The main legislative act on climate change measures in Kazakhstan is the **Environmental Code of Kazakhstan 2021.** It provides for state regulation of GHG emissions and removals (setting a carbon budget, carbon quotas and the administration of plant operators) and adaptation to climate change.[429]

7.4.3 Kyrgyz Republic

Kyrgyzstan is implementing various measures to address climate change and environmental protection issues. As a rule, these measures include policies aimed at reducing GHG emissions, RES development, sustainable development and adaptation to climate change impacts.

The climate policy of the Kyrgyz Republic is underpinned by a range of sustainable development policy programs. The strategic legislative framework for the development and implementation of climate change policy is defined in the **National Development Strategy of the Kyrgyz Republic for 2018-2040 approved by the Decree of the President of the Kyrgyz Republic dated 31 October 2018, the Decree of the President of the Kyrgyz Republic dated 19 March 2021 "On Measures to Ensure Environmental Security and Climate Resilience"**, as well as sectoral policy documents in the fields of emergency management, health, forestry

[427] Law providing for the management of natural and technological disasters Kazakhstan, 1996. https://climate-laws.org/document/law-providing-for-management-of-natural-and-technological-disasters_6b06?l=kazakhstan&c=Legislation

[428] Law on the transition to green economy. https://climate-laws.org/document/law-on-the-transition-to-green-economy_1385?l=kazakhstan&c=Legislation

[429] Environmental Code of the Republic of Kazakhstan from 2 January 2021, No. 400-VI, ZRC. https://adilet.zan.kz/rus/docs/K2100000400

and biodiversity, agriculture, industry, energy, waste and water management.[430] In addition, the country is currently developing and implementing strategic documents, such as the **Climate Investment Program of the Kyrgyz Republic** and the **Program for the Development of Green Economy in the Kyrgyz Republic for 2019-2023**.[431]

During the first stage, the Kyrgyz Republic implemented the National Strategy for Sustainable Development of the Kyrgyz Republic for 2013-2017,[432] the Program of the Kyrgyz Republic's Transition to Sustainable Development for 2013-2017[433] and the Development Program of the Kyrgyz Republic for the period 2018-2022.[434] Currently, the following strategic documents (programs, concepts, strategies) have been developed and are being implemented in the country:

The 2007 Concept of Environmental Security of the Kyrgyz Republic prioritizes climate change for the country.[435]

The Kyrgyz Republic Green Economy Program 2019-2023 has identified seven priority areas: green energy, green agriculture, green industry, low-carbon and clean transport, sustainable tourism, waste management and green cities.[436]

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[430] Updated Nationally Determined Contribution of the Kyrgyz Republic (NDC). https://unfccc.int/sites/default/files/NDC/2022-06/%D0%9E%D0%9D%D0%A3%D0%92%20%D0%A0%D0%A3%D0%A1%20%D0%BE%D1%82%2008102021.pdf

[431] Resolution of the Government of the Kyrgyz Republic of 14 November 2019, No. 605. "On Approval of the Program for the Development of Green Economy in the Kyrgyz Republic for 2019-2023" (In edition of the Resolution of the Cabinet of Ministers of the Kyrgyz Republic dated 24 June 2022 No. 349). https://mineconom.gov.kg/froala/uploads/file/ecd64ed33464194f4ae5bea85c3de343009891b0.pdf

[432] National Sustainable Development Strategy for the Kyrgyz Republic, 2013. https://climate-laws.org/document/national-sustainable-development-strategy-for-the-kyrgyz-republic_1c01?q=Kyrgyzstan&e=true

[433] The program for the transition of the Kyrgyz Republic to sustainable development for 2013-2017. https://climate-laws.org/document/the-program-for-the-transition-of-the-kyrgyz-republic-to-sustainable-development-for-2013-2017_e218?q=Kyrgyzstan&e=true

[434] Development Program of the Kyrgyz Republic for the period 2018-2022. https://climate-laws.org/document/development-programme-of-the-kyrgyz-republic-for-the-period-2018-2022_3651?q=Kyrgyzstan&e=true

[435] Decree of the President of the Kyrgyz Republic of 23 November 2007, UP #506. "On the Concept of Environmental Security of the Kyrgyz Republic". http://cbd.minjust.gov.kg/act/view/ru-ru/4681

[436] Resolution of the Government of the Kyrgyz Republic of 14 November 2019, No. 605. "On Approval of the Program for the Development of Green Economy in the Kyrgyz Republic for 2019-2023" (In edition of the Resolution of the Cabinet of Ministers of the KR of 24 June 2022 No. 349). https://online.zakon.kz/Document/?doc_id=35318919&pos=4;-88#pos=4;-88

The National Development Strategy of the Kyrgyz Republic for 2018-2040 defines a long-term vision for the country's development. It focuses on environmental protection, climate change adaptation and DRR. In particular, it identifies the expansion of green spaces as a key element in reducing the risks of climate change, land degradation and air pollution. Greening efforts are also linked to increasing carbon sequestration potential along with economy-wide mitigation measures.[437]

The Climate Investment Program – Operational Framework for Managing and Accessing Climate Finance in the Kyrgyz Republic 2018 was prepared in cooperation with a number of international financial organizations. It aims to finance a range of climate-resilient projects aligned with the country's climate policy. As key actions to improve climate services, the program identifies the food security through improved water quality, land use and agricultural practices, climate resilience of energy supply, transport, buildings, health, mining, forestry, biodiversity and in emergencies. The objective is to make municipal water supply climate resilient and to increase private sector participation in climate resilience.[438]

Sectoral programs include energy programs with provisions related to climate change, such as the National Energy Program and the FEC Development Strategy for 2010-2025. The Strategy envisages the rapid expansion of RES utilization, especially hydropower, as one of the most important areas of energy development.

The legal framework of the Kyrgyz Republic governing climate change is based on the following normative acts:

The Laws "On Environmental Protection" of 1999 and "On Atmospheric Air Protection" of 2002 were adapted to climate change by introducing the necessary amendments and additions, primarily reflecting the country's obligations to climate conventions. Resolutions of the Government of the Kyrgyz Republic on measures to fulfill the UNFCCC have been adopted.

The Law "On Renewable Energy Sources" of 2008 establishes legal, organizational, economic and financial bases and mechanisms for regulating

[437] National Development Strategy of the Kyrgyz Republic for 2018-2040 was approved by Decree of the President of the Kyrgyz Republic of 31 October 2018 No. 221. https://climate-laws.org/document/national-development-strategy-of-the-kyrgyz-republic-for-2018-2040_ca05?q=Kyrgyzstan&e=true

[438] Climate Investment Program – Operational Framework for Managing and Accessing Climate Finance in the Kyrgyz Republic. https://climate-laws.org/document/climate-investment-programme-operational-framework-for-managing-and-accessing-climate-finance-in-the-kyrgyz-republic_c47a?q=Kyrgyzstan&e=true

relations between the state, producers, suppliers and consumers of RES, including equipment for production and installations for the use of RES.[439]

The Law "On State Regulation and Policy in the Field of Emission and Absorption of Greenhouse Gases" of 2007 defines the basis of state regulation, as well as the procedures, rights, duties and responsibilities of state bodies, local self-government bodies, individuals and legal entities regarding the emission and absorption of GHGs on the territory of the Kyrgyz Republic.[440]

The Decree of the President of the Kyrgyz Republic of 19 March 2021 "On Measures to Ensure Environmental Security and Climate Resilience" provides for measures to reduce the negative impact of atmospheric air pollution on public health, improve the efficiency of waste management, reduce the adverse impact of wastewater on the environment and ensure the protection of glaciers, restore natural ecosystems and ensure the conservation of unique biological diversity, ensure chemical and radiation safety, improve the quality of life of the population and improve the quality of the environment.[441]

Conclusions

The study of the international experiences in the legal regulation of climate change based on the analysis of existing policies and legislation of selected countries shows the following:

1. Since the establishment of the international legal regime on climate change, the countries of the world community have, for objective reasons, advanced to varying degrees in the legal regulation of the impact on the climate. They have developed and adopted a large number of norms pertaining to climate law, which include not only legal acts (laws, etc.), but also political documents (strategies, concepts, programs, etc.). Moreover, the process of development of national climate legislation is intensifying every year.

2. The analysis of the legislation under study shows that the degree of development of climate legislation in the states of the world community is uneven and unfolds in different scenarios. Most developed countries are at the forefront in

[439] Law of the Kyrgyz Republic "On Renewable Energy Sources" of 31 December 2008 No. 283. http://cbd.minjust.gov.kg/act/view/ru-ru/203243

[440] Law of the Kyrgyz Republic "On State Regulation and Policy in the Field of Greenhouse Gas Emission and Absorption" of 25 May 2007. cbd.minjust.gov.kg/act/view/ru-ru/202104/10?cl=ru-ru.

[441] Decree of the President of the Kyrgyz Republic "On Measures to Ensure Environmental Security and Climate Resilience". https://online.toktom.kg/NewsTopic/6389

this area; they have made impressive progress, and their positive experience can be used to a large extent for the formation of climate legislation in developing countries. These countries have strong climate change policies with specific goals and targets and well-developed legislation with safeguards to achieve carbon neutrality.

3. Central to the hierarchy of these political and legal instruments are special climate laws (that may be called by different names), which are mostly frameworks and set out a forward-looking perspective on climate legislation. As a rule, they set national long-term goals for mitigation and adaptation, and establish the institutions and processes necessary to achieve these goals. This includes framework laws that set out the climate policy of the respective state with the goal of reducing GHG emissions and achieving carbon neutrality by 2030, 2040, 2045 and 2050. In addition, these laws regulate climate change mitigation (GHG emissions and removals) and climate change adaptation. They also emphasize institutional arrangements for climate change through the establishment and empowerment of coordination structures.

4. Other countries of the world community, including developing countries, guided by the principle of common but differentiated responsibilities and taking into account different socio-economic conditions, have achieved more modest results in implementing international norms in national legislation. In general, this lag is also due to the lack of necessary financial and material resources and, in some countries, to insufficient institutional capacity.

5. The national climate strategy in developing countries is set out in a number of documents, including programs, action plans and strategies. In addition, separate climate measures have a place in environmental legislation, which is constantly being amended and supplemented. Having plans to achieve carbon neutrality, they are actively discussing the possibility of adopting special laws on climate change.

6. Targets to achieve zero GHG emissions in post-Soviet countries are usually declared at the level of political statements (strategies, programs, etc.) and in the GHEs. However, the main problem is the implementation of these documents in practice. The legal framework for reducing the impact of GHG emissions and adaptation to climate change is fragmentary and is still at the formation stage.

8 Main approaches to the development of climate legislation in Turkmenistan

Climate change policy has generated the substantial growth and development of legislation in nation states. Despite the existence of universal international climate change instruments, it is ultimately up to the states that play a key role in the international legal regulation of climate change to be prepared to deal with its effects and to establish the appropriate national legal frameworks.[442]

In Turkmenistan, in accordance with the climate policy based on commitments under international climate agreements and the provisions of the TNSCC, measures are being taken to develop national climate legislation. At present, this legislation regulates to a certain extent the reduction of GHG emissions and adaptation to climate change, the use of RES and other measures related to climate protection. However, climate change mitigation issues are not yet sufficiently reflected in the national legislation. The current regulatory and legal framework is at the formation stage and has great potential for development.

The TNSCC not only declares the need to develop the legal framework in the area of climate change, but also lays the legal foundation for its further development. A review of environmental and other legislation has shown that, taking into account climate change, the laws "On Nature Protection" (2014), "On Pastures" (2015), "On Waste" (2015), "On Air Protection" (2016), as well as the Forest Code (2011) and the Water Code (2016), have been prepared and adopted. These legislative acts contain norms that are both directly and indirectly related to climate change issues. For example, the Law on Nature Protection has an independent article, "Climate Protection and Mitigation of its Negative Consequences" (Article 47), which directly addresses climate change issues. The Law on Atmospheric Air Protection also contains norms aimed at protecting the climate system (Art. 32). At the same time,

[442] Регулирование в области изменения климата: мировая практика и перспективы. АНО “Центр международных и сравнительно-правовых исследований”. М. 2021. С. 13, 38.

most of the legal norms of the reviewed laws address the protection, rational use and reproduction of natural resources, which is largely relevant to climate change adaptation. Practically all of them also define the institutional mechanism of development, including, first of all, the functions and powers of institutional structures that are related to climate change issues.

In the context of further development of climate legislation, the TNSCC and its Program envisage the adoption of a whole package of new laws and bylaws. Among the main legislative acts planned for adoption, the National Strategy includes the laws "On Climate Change", "On Soils", "On Energy Efficiency and Energy Saving" and a new version of the Land Code.

In addition, the TNSCC envisages the adoption of a large number of regulations to be adopted on the basis of these new and existing laws. In particular, it is planned to improve and adopt the following normative legal acts:

- laws and bylaws arising from the Land Code, including the updating of land legislation, taking into account the ongoing reforms in the agro-industrial complex and the transition of agriculture to market relations;
- improving the legal framework for rural business communities to develop their self-organization;
- improving the legal regulation of water resources management, protection and use by adopting bylaws arising from the Water Code;
- developing the Law on Pastures by preparing and adopting bylaws aimed at creating a mechanism for regulating pasture use, tariffs for pasture use, etc.;
- bylaws on forestry and, above all, aimed at expanding the area of forests;
- legal support of energy efficiency and energy saving, increase of state regulation in this area;
- improving the regulatory and legal framework and standards to ensure energy savings in construction in accordance with international requirements;
- developing legislation governing waste management;
- providing a legal basis for the development and adoption of the NDC;

- establishing a sustainable legal framework with the National Clean Climate Fund, defining its legal status and the mechanism for collecting and utilizing financial resources.[443]

Based on the content of the National Strategy, this is not a complete list of legal measures that are planned for implementation. In addition, the TNSCC identifies a number of climate change challenges that indirectly point to the need to be addressed through legal instruments.

Thus, the existing legal and regulatory framework for climate change, as well as the priorities for the development of climate legislation outlined in the National Strategy, provide grounds for the elaboration of specific recommendations in this area of legal relations. The recommendations are also based on the results of analyses of policies, strategies and legislation of Turkmenistan and foreign countries in the area of climate change.

1. First of all, it is necessary to create a unified legal platform on which all of Turkmenistan's climate legislation will be based and developed. Such a platform stems from the country's international obligations and the requirements of the TNSCC, providing for the adoption of the **Law of Turkmenistan on Climate Change**.

Currently, more than 40 countries and the EU have adopted a framework for legislation aimed at combating climate change, which can be found in Annex 3. Much of the climate legislation, policies, strategies and other such documents are contained in the Climate Change Laws of the World database created by the Grantham Research Institute on Climate Change and the Environment and the Centre for Climate Change Economics and Policy at the London School of Economics and Political Science.[444] A Model Law[445] – the Model Law on the Implementation of Nationally Determined Contributions[446] – and others have been prepared to develop a legal framework on climate change. A Reference Guide has

[443] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.tm.undp.org/content/turkmenistan/en/home/library/national-strategy-of-turkmenistan-on-climate-change.html

[444] Climate Change Laws of the World. https://climate-laws.org/

[445] Model Law. https://climatelawtoolkit.org/

[446] ELI Model Law for Implementing the Nationally Determined Contributions Submitted Under the Paris Agreement Through Domestic Legislation. https://www.eli.org/; climate-energy/eli-model-law-implementing-nationally-determined-contributions

been prepared with the support of the World Bank to assist in the preparation of climate change legal frameworks.[447]

2. It seems that, for Turkmenistan, such a Law could also become a framework law to streamline the activities of all climate process participants, and could play a leading role in climate change regulation at the national and regional (local) levels. Framework legislation on climate change is a comprehensive multi-sectoral normative document that establishes general principles and defines the institutional framework for policy and implementation of measures to combat climate change.[448] At the same time, when preparing the Framework Law of Turkmenistan and defining the subject and scope of its legal regulation, a number of specific features of environmental, economic, organizational and legal nature should be taken into account.

3. The Framework Law should first and foremost be based on international climate agreements, but should also take into account a number of environmental, legal and institutional specificities, as well as priority sectors and the country's socio-economic development. It is very useful to draw on the experience of other countries that have adopted well-developed climate laws that reflect the country's commitment to climate change reform. Their experience shows that most laws focus on energy, transport, general economic issues and land use, as well as land use change and forestry. More recently, there has been an increasing focus on social development and the transition to a low-carbon economy, human rights and food security in relation to climate change.

4. It is important to define the subject and scope of legal regulation within the Law, which should be oriented towards the implementation of a unified state policy of Turkmenistan regarding climate change. It should be assumed that the Law will establish general principles and institutions, set the scope of responsibility for entities involved in this process, create a generally binding framework for reducing GHG emissions in all sectors of the economy and stimulate the introduction of low-carbon technologies. The Law should also provide a framework for reducing GHG emissions in all sectors of the economy.

5. The following sections could be the main focus areas for climate change measures in the structure of the Framework Act:

In the area of climate change mitigation:

This section could contain specific measures to reduce GHG emissions. Such measures could be ensured through the application of state regulation tools to achieve GHG emissions reduction targets (e.g., establishing a carbon budget, quotas for GHG

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[447] World Bank, Reference Guide to Climate Change. Framework Legislation, 2020.

[448] Ibid.

emissions, carbon taxes, fees and rebates that reward emission reductions and penalize emissions (punishment for emissions), setting energy efficiency standards in sectors such as construction, introducing reporting on GHG emissions, etc.).

An important tool to address mitigation issues for inclusion in this section of the Law is the development, updating, publication and provision of a **national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not regulated by the Montreal Protocol.** This would create a legal basis for a national inventory system on GHG emissions and sinks and an information system for accounting of GHG emissions and absorption, while at the same time maintaining the state GHG inventory and creating a database for the development of programs and measures to reduce emissions and increase GHG absorption.

The inventory system includes a set of organizational measures for GHG inventory to identify and account for all sources of GHG emissions and removals by enterprises and organizations. The results of this GHG inventory are to be recorded in the State GHG Emission and Absorption Inventory.

It is important to provide for the mandatory preparation and implementation of **national and/or regional programs on climate change mitigation measures** or low-carbon development. In Turkmenistan, the TNSCC is such a document, but the obligation to prepare and systematically update it is not enshrined in the normative legal acts.

For ministries and agencies, it is necessary to provide as a mandatory measure the norm on the development, application and dissemination of methods and technologies leading to the limitation, reduction or cessation of anthropogenic emissions in the relevant sectors, including energy, transport, industry, agriculture, forestry and waste management, as well as rational use of sinks and accumulators of all GHGs. In this regard, it will be of utmost importance to make the development of mitigation plans mandatory at the sectoral and overall national level (NPM).

In the area of climate change adaptation:

In the Law on Climate Change, it is important to provide a legal basis for adaptation to climate change by defining specific measures in state regulation. Such regulation can be ensured through the application of relevant requirements, rules, standards and liability measures.

The Law may also enshrine adaptation measures by adopting specific programs to reduce vulnerability and increase the resilience of sectors most vulnerable to climate change (agriculture, water management, land resources, ecosystems, etc.).

A framework law can enshrine the process of implementing climate change vulnerability assessment and planning. It is important to assign ministries and agencies and local executive authorities the responsibility to ensure climate change vulnerability assessments for planning, developing and implementing climate change adaptation measures. For all climate-sensitive sectors, it is extremely useful to consider climate change projections and risks at the planning stage. By doing so, agencies will be able to effectively identify climate-related risks and assess adaptation and development options. Integrating adaptation across sectors can help identify new opportunities that may arise as a result of climate change.[449]

Climate change adaptation planning can also be carried out for key sectors, based on the results of climate change vulnerability assessments. Climate change adaptation planning should be based on the preparation of a unified NAP and sectoral and territorial adaptation plans, which would reduce the vulnerability of different systems to the adverse effects of climate change and minimize possible economic losses.

In the area of disaster risk management:

The Framework Law may contain DRR provisions, drawing primarily on the Sendai Framework for Disaster Risk Reduction 2015-2030, adopted at the Third World Conference in Sendai, Japan, on 18 March 2015.[450] The Sendai Framework focuses on DRR as opposed to disaster management and includes as global goals DRR as an expected outcome, targeting the prevention of new risks, reducing existing risk and building resilience and a set of guiding principles, including the prioritization of the responsibility of states for prevention and DRR, involving all sectors of society and all public institutions. In addition, the coverage of DRR has been significantly expanded to focus on natural hazards and technological hazards, as well as the related environmental, technological and biological hazards and risks.[451]

In the area of institutional arrangements:

Institutional arrangements require the establishment of legally binding frameworks and authorities to attract adequate resources. These frameworks formalize the new roles, responsibilities, resources and relationships required for the transparency system to achieve results.[452] A framework law can provide institutional arrangements for transparency with a legally binding mandate or legislative authority.[453] It is therefore necessary to review the roles and powers of organizational

[449] Institutional Analysis of the Current National System and Processes Related to Climate Change in Turkmenistan. 2021. https://napglobalnetwork.org/resource/institutional-analysis-turkmenistan/

[450] United Nations Office for Disaster Risk Reduction (UNDRR), Sendai Framework for Disaster Risk Reduction 2015-2030. https://www.undrr.org/about-undrr

[451] Ibid.

[452] Руководство по институциональным механизмам обеспечения ИООП/транспарентности мер по борьбе с изменением климата и поддержки. Консультативная группа экспертов. Секретариат РКИК ООН об изменении климата. Июнь 2020 г.

[453] Ibid.

structures in relation to their ability to cope with climate change. Climate change management should include all economic entities that in one way or another have a negative impact on human health and the environment by emitting GHGs. Measures for public regulation should include assigning new responsibilities and institutions to public authorities, as well as developing management plans and strategies. In the face of climate change, the governance system should adequately respond, recalibrate and continuously change in response to these impacts on the climate system. The ultimate goal of state regulation should be to ensure the conditions for reducing GHG emissions and increasing GHG removals, taking into account the sustainable development of the country.

It is important to provide for the establishment of a mechanism for interagency coordination on climate change issues. As the experience of most foreign countries shows, framework legislation provides for the establishment of a special coordination structure on climate change issues. The TNSCC also attaches the utmost importance to this issue, noting that legislative acts under development should regulate issues related to the interaction of ministries and agencies and their responsibilities. In order to enhance its implementation, an Inter-Ministerial Commission on Climate Change should be established with the authority to address issues related to climate change in Turkmenistan. Such a mechanism would strengthen communication and cooperation between sectors at all levels and increase understanding of the benefits of mutual cooperation among all stakeholders.[454]

Education, training and public awareness on climate change and its consequences should take an important place in the Law. Measures should be taken to provide information on climate change and its consequences, and to educate employees and the public on these issues. It is important to impose obligations on state bodies that ensure the right of the public to access information on climate change issues, guarantee their protection from violated rights and receive justice and compensation for damage caused to their health and property as a result of climate change.

In the area of climate change finance:

The Framework Law should take into account the risks associated with climate change and related mitigation and adaptation measures, the financing of which should be considered in the preparation of the state plan and budget. In addition, the Law may provide for the establishment of a special fund to finance climate change activities. The TNSCC foresees the need to establish a National Clean

[454] National Strategy of Turkmenistan on Climate Change (new edition). Approved by the Decree of the President of Turkmenistan of 23 September 2019. Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migrationtm/undp-tm-NCCS_RUS.pdf

Climate Fund, the budget of which may be formed from both external and national sources of financing, technical and technological assistance.[455]

In the area of measurement, reporting and verification:

The Framework Law should provide the legal basis for the MRV system in order to establish a mechanism at the national level to report on the progress of implementation of the UNFCCC. This system is designed to accumulate the information necessary to track progress towards national climate change goals and support national policy development and monitoring.

The existing MRV system includes the preparation and submission of NCs every four years and BRs every two years, subject to the scrutiny of International Consultation and Analysis (ICA). This package ensures that the results of the national inventory conducted by local specialists are recognized by internationally respected organizations.[456] Building on the international guidelines on MRV, there is a need to establish a framework for the PSI system at the national level, its national MRV processes for policies and measures based on existing domestic processes, mechanisms, methodologies and experience, and to identify the information that is best suited for reporting on the national MRV system and BRs.[457] In this regard, a framework law can lay the foundations for the functioning of the MRV process by assigning responsibilities to the relevant government entities for rulemaking, data collation and verification (validation) of information. Verification of information, or user verification of the accuracy of the data entered, could be entrusted to a specialized PSI organization.

The NDC informs the results of the assessment of the mitigation progress. The preparation of an NDC at the national level should be legally framed by approving it at the level of the government of the country and defining the structure responsible for its preparation and implementation.

6. As a framework, the Law on Climate Change should determine the main directions of the development of climate legislation on the basis of reference norms that provide for the adoption of certain bylaws. The main purpose of such legal acts is the detailed legal regulation of the issues laid down in the reference norm (article) of the Law. For example, the Law defining the provisions on the national inventory system for GHG emissions and effluents should provide a reference norm for the adoption of bylaws pertaining to the regulation of the National GHG Inventory System, defining the procedure for the organization and functioning of this system.

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[455] Ibid.

[456] Руководство Измерение, Отчетность и Верификация (MRV) для развивающихся стран. 2014. Секретариат ООН по изменению климата.

[457] Ibid.

The document should include all the organizational, legal and procedural measures taken to assess anthropogenic emissions and sinks for all GHGs not controlled by the Montreal Protocol, as well as information on sources of GHG emissions and the amount of GHG emissions and sinks (inventory). It is necessary to identify a leading organization to coordinate and carry out all GHG inventory work. In the National GHG inventory system, an important place should be given to the bylaw covering the maintenance of the state cadaster of anthropogenic emissions from sources and absorption by sinks of GHGs. The state cadaster accumulates information on sources of GHG emissions, including the amount of GHG emissions and removals.

Subordinate lawmaking as a tool for the implementation of the Law can also be applied as a reference norm for the preparation of bylaws pertaining to the development of NMP and NAP, as well as the determination of the status of the Interdepartmental Commission on Climate Change.

The process of developing bylaws can also be successfully applied to existing environmental laws through adaptation norms. However, the process of adopting such bylaws is very slow, which does not favor their implementation. Climate legislation can also be developed through amendments and additions to environmental and other legislation on issues related to climate change.

These are the main approaches to the development of climate legislation in Turkmenistan. It is crucial to discuss these approaches in the near future at the expert level with NGOs and the local communities in order to create an important legal framework governing climate change and, accordingly, the legal protection of the climate in Turkmenistan.

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10 Appendices

10.1 Annex 1

List of Turkmenistan's laws/bylaws governing climate protection

(as of 1 October 2023)

No	Name of law/legislative act	Source of publication
1.	Law of Turkmenistan "On hydrometeorological activity" of 15 September 1999. 392-I (amended 18 April 2009, No. 32-IV, 26 November 2010, No. 149-IV, 3 June 2017, No. 578-V, and 2 March 2019, No. 131-VI)	Statements of Mejlis of Turkmenistan. 1999. No. 3. Art. 46. https://minjust.gov.tm/assets/files/law_documents/hukuknama_175_ru.pdf
2.	Law of Turkmenistan "On Civil Defense" of 29 November 2003	Statements of Mejlis of Turkmenistan. 2003. No. 4. Art. 44
3.	Law of Turkmenistan "On hydrocarbon resources." of 18 August 2008 No. 208-SH (amended 12 March 2010, No. 96-IV, 4 August 2011, No. 217-IV, 1 October 2011, No. 238-IV, 4 May 2012, No. 302-IV, 22 December 2012, No. 368-IV, 12 September 2016, No. 436-V, 4 November 2017, No. 636-V, 9 June 2018, No. 41-VI, 14 March 2020, No. 238-VI, and 5 June 2021, No. 389-VI)	Statements of Mejlis of Turkmenistan. 2008. No. 3. Art. 40. https://minjust.gov.tm/assets/files/law_documents/hukuknama_156_ru.pdf
4.	Law of Turkmenistan "On the protection of the ozone layer" of 15 August 2009 No. 53-IV (amended 24 October 2015, No. 296-V, and 3 June 2017, No. 578-V)	Statements of Mejlis of Turkmenistan. 2009. No. 3. Art. 54. https://minjust.gov.tm/assets/files/law_documents/hukuknama_148_ru.pdf
5.	Law of Turkmenistan "On Fishing and Conservation of Aquatic Biological Resources" of 21 May 2011, No. 197-IV (amended 3 June 2016, No. 578-V, and 5 June 2021, No. 391-VI)	Statements of Mejlis of Turkmenistan. 2011. No. 2. Art. 41. https://minjust.gov.tm/assets/files/law_documents/hukuknama_111_ru.pdf
6.	Law of Turkmenistan "On Specially Protected Natural Areas" of 31 March 2012 No. 286-IV (amended 1 March 2014, No. 43-V, 16 August 2014, No. 114-V, 3 June 2017, No. 578-V, and 3 June 2023, No. 28-VII)	Statements of Mejlis of Turkmenistan. 2012. No. 1. Art. 37. https://minjust.gov.tm/assets/files/law_documents/hukuknama_512_ru.pdf

7.	Law of Turkmenistan "On Plant Life" of 4 August 2012, No. 309-IV (amended 3 June 2017, No. 578-V)	Statements of Mejlis of Turkmenistan. 2012. No. 3. Art. 60. https://minjust.gov.tm/assets/files/law_documents/hukuknama_363_ru.pdf
8.	Law of Turkmenistan "On Wildlife" of 2 March 2013, No. 375-IV (amended 3 June 2017, No. 578-V)	Statements of Mejlis of Turkmenistan, 2013. No. 1. Art. 4. https://minjust.gov.tm/assets/files/law_documents/hukuknama_353_ru.pdf
9.	Law of Turkmenistan "On Emergency Regime" of 22 June 2013	Statements of Mejlis of Turkmenistan. 2013. No. 2. Part II. Art. 42.
10.	Law of Turkmenistan "On Main Pipeline Transport" of 4 May 2013, No. 394-IV (amended 8 June 2019, No. 153-VI)	Statements of Mejlis of Turkmenistan. 2013. No. 2. Art. 24. https://minjust.gov.tm/assets/files/law_documents/hukuknama_193_ru.pdf
11.	Law of Turkmenistan "On hydrocarbon gas and gas supply" of 29 August 2013, No. 424-IV (amended 8 June 2019, No. 153-VI).	Statements of Mejlis of Turkmenistan. 2013. No. 3. Art. 54. https://minjust.gov.tm/assets/files/law_documents/hukuknama_178_ru.pdf
12.	Law of Turkmenistan "On Nature Protection" of 1 March 2014, No. 40-V (amended 18 August 2015 and 20 March 2017)	Statements of Mejlis of Turkmenistan. 2014. No. 1. Art. 40. https://minjust.gov.tm/assets/files/law_documents/hukuknama_154_ru.pdf
13.	Law of Turkmenistan "On Environmental Expertise" of 16 August 2014, No. 108-V (amended 18 June 2016, No. 419-V, 5 January 2018, No. 685-V, 9 June 2018, No. 54-VI, and 2 March 2019, No. 131-VI)	Statements of Mejlis Turkmenistan. 2014. No. 3. Art. 108. https://minjust.gov.tm/assets/files/law_documents/hukuknama_127_ru.pdf
14.	Law of Turkmenistan "On Electricity" of 16 August 2014, No. 104-V (amended 8 June 2019, No. 153-VI, and 3 June 2023, No. 28-VII)	Statements of Mejlis of Turkmenistan. 2014. No. 3. Art. 104. https://minjust.gov.tm/assets/files/law_documents/hukuknama_504_ru.pdf
15.	Law of Turkmenistan "On Subsoil" of 20 December 2014, No. 160-V (amended 5 January 2018, No. 685-V)	Statements of Mejlis of Turkmenistan. 2014. No. 4. Art. 161. https://minjust.gov.tm/assets/files/law_documents/hukuknama_101_ru.pdf
16.	Law of Turkmenistan "On Waste" of 23 May 2015, No. 225-V (amended 5 January 2018, No. 685-V, and 8 June 2019, No. 157-VI)	Statements of Mejlis of Turkmenistan. 2015. No. 2. Art. 59. https://minjust.gov.tm/assets/files/law_documents/hukuknama_329_ru.pdf
17.	Law of Turkmenistan "On Pastures" of 18 August 2015, No. 267-V (amended 18 June 2016, No. 419-V, 5 January 2018, No. 685-V, 8 June 2019, No. 160-VI, and 5 October 2019, No. 192-VI)	Statements of Mejlis Turkmenistan. 2015. No. 3. Art. 101. https://minjust.gov.tm/assets/files/law_documents/hukuknama_306_ru.pdf
18.	Law of Turkmenistan "On the protection of atmospheric air" of 26 March 2016, No. 366-V (amended 5 January 2018, No. 685-V, and 13 November 2021, No. 429-VI)	Statements of Mejlis of Turkmenistan. 2016. No. 1. Art. 51. https://minjust.gov.tm/assets/files/law_documents/hukuknama_406_ru.pdf
19.	Law of Turkmenistan "On Environmental Safety" of 3 June 2017, No. 569-V (amended 2 March 2019, No. 131-VI, and 13 November 2021, No. 430-VI)	Statements of Mejlis of Turkmenistan. 2017. No. 2. Art. 72. http://minjust.gov.tm/mcenter-single-ru/179

20.	Law of Turkmenistan "On transport safety" of 5 January 2018 No. 683-V (amended 5 June 2021, No. 386-VI)	Statements of Mejlis of Turkmenistan. 2018. No. 1. Art. 1. https://minjust.gov.tm/assets/files/law_documents/hukuknama_244_ru.pdf
21.	Law of Turkmenistan "On the Fundamentals of the Transport Policy of Turkmenistan" of 9 June 2018	https://minjust.gov.tm/assets/files/law_documents/hukuknama_242_ru.pdf
22.	Law of Turkmenistan "On state regulation of agricultural development" of 9 June 2018 No. 29-VI (amended 2 March 2019, No. 131-VI)	Statements of Mejlis of Turkmenistan. 2018. No. 2. Art. 31. https://minjust.gov.tm/assets/files/law_documents/hukuknama_243_ru.pdf
23.	Law of Turkmenistan "On land reclamation" of 20 October 2018	Statements of Mejlis of Turkmenistan. 2018. No. 3-4. Art. 87
24.	Law of Turkmenistan "On Environmental Audit" of 2 March 2019, No. 122-VI	Statements of Mejlis of Turkmenistan. 2019. No. 1. Art. 5. https://minjust.gov.tm/assets/files/law_documents/hukuknama_237_ru.pdf
25.	Law of Turkmenistan "On Environmental Information" of 14 March 2020, No. 227-V	Statements of Mejlis of Turkmenistan. 2020. No. 1. Art. 3. https://minjust.gov.tm/assets/files/law_documents/hukuknama_16_ru.pdf
26.	Law of Turkmenistan "On International Humanitarian Assistance in Emergency Situations" of 22 August 2020, No. 261-VI	Statements of Mejlis of Turkmenistan. 2020. No. 3. Art. 34. https://minjust.gov.tm/assets/files/law_documents/hukuknama_13_ru.pdf
27.	Law of Turkmenistan "On Renewable Energy Sources" of 13 March 2021, No. 337-IV	https://minjust.gov.tm/ru/hukuk/merkezi/hukuk/222
28.	Law of Turkmenistan "On the Prevention and Elimination of Emergency Situations" (new version) of 13 March 2021, No. 334-VI	Statements of Milli Genesh of Turkmenistan. 2021. No. 1. Art. 9. https://minjust. gov.tm/assets/files/files/law_documents/hukuknama_225_ru.pdf
29.	Law of Turkmenistan "On Education" (new edition) of 5 June 2021, No. 380-VI (amended 16 March 2023, No. 541-VI, and 3 June 2023, No. 34-VII)	Statements of Milli Genesh of Turkmenistan. 2021. No. 2-3. Art. 43. https://minjust.gov.tm/assets/files/law_documents/hukuknama_482_ru.pdf
30.	Law of Turkmenistan "On State Land Cadaster" of 13 November 2021. No. 416-VI (amended 3 June 2023, No. 28-VII)	Statements of Milli Gengesh of Turkmenistan. 2021. No. 4. Art. 128. https://minjust.gov.tm/assets/files/law_documents/hukuknama_484_ru.pdf
31.	Land Code of Turkmenistan. The Law of Turkmenistan "On Approval and Enactment of the Land Code of Turkmenistan" of 25 October 2004, No. 243-P	Statements of Mejlis of Turkmenistan. 2004. No. 4. Art. 33. https://minjust.gov.tm/assets/files/law_documents/hukuknama_540_ru.pdf
32.	Forest Code of Turkmenistan. The Law of Turkmenistan "On Approval and Enactment of the Forest Code of Turkmenistan" of 25 March 2011, No. 166-IV (amended 28 February 2015)	Statements of Mejlis of Turkmenistan. 2011 г. No. 1. Art. 10. https://minjust.gov.tm/assets/files/law_documents/hukuknama_212_ru.pdf
33.	Water Code of Turkmenistan. The Law of Turkmenistan "On Approval and Enactment of the Water Code of Turkmenistan" of 15 October 2016 No. 456-V	Statements of Mejlis of Turkmenistan. 2016. No. 4. Art. 139. https://minjust.gov.tm/assets/files/law_documents/hukuknama_527_ru.pdf

34.	Decision of the President of Turkmenistan of 3 August 1993 on accession to the Vienna Convention for the Protection of the Ozone Layer	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1993. No. 8. Art. 1465
35.	Decision of the President of Turkmenistan of 3 August 1993 on accession to the Montreal Protocol on Substances that Deplete the Ozone Layer	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1993. No. 8. Art. 1465
36.	Decision of the President of Turkmenistan of 3 August 1993 on accession to the London Amendment of the Montreal Protocol	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1993. No. 8. Art. 1465
37.	Decision of the President of Turkmenistan of 1 May 1995 No. 2198 on accession to the United Nations Framework Convention on Climate Change	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 1995. No. 5. Art. 2624
38.	Decision Mejlis of Turkmenistan of 10 December 1998 No. 333-1 on the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto, 11 December 1997)	Statements of Mejlis of Turkmenistan. 1998. No. 4. Art. 72. (lapsed 12 December 2015)
39.	Decision Mejlis of Turkmenistan of 30 April 1999, No. 364-I, on accession to the Aarhus Convention	Statements of Mejlis of Turkmenistan. 1999. No. 1. Art. 18
40.	Decision of the Mejlis of Turkmenistan of 22 January 2008 on accession to the Copenhagen, Montreal and Beijing amendments to the Montreal Protocol	Statements of Mejlis of Turkmenistan. 2008. No. 1. Art. 3
41.	Decision of the President of Turkmenistan of 14 May 2009, No. 10429, on measures to introduce environmental and energy-saving technologies in accordance with the United Nations Framework Convention on Climate Change and the Kyoto Protocol	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2009. No. 5. Art. 279
42.	Decision of the Mejlis of Turkmenistan of 15 October 2016 on ratification of the Paris Agreement of the UNFCCC (Paris, 12 December 2015)	Statements of Mejlis of Turkmenistan. 2016. No. 4. Art. 149
43.	Decision of the President of Turkmenistan of 17 November 2017 "On Measures for the Implementation of the Sustainable Development Goals in Turkmenistan"	
44.	Decision of the Mejlis of Turkmenistan of 22 August 2020 on the ratification of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (Kigali, Rwanda 15 October 2016)	Statements of Mejlis of Turkmenistan. 2020. No. 3. Art. 54
45.	Decision of the President of Turkmenistan of 23 October 2020 No. 1970 on the establishment of the Interdepartmental Commission on Environmental Protection	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2020. No. 10. Art. 1666

10.2Annex 2

List of Turkmenistan's national strategies, programs and plans, relating to climate change issues

(as of 1 October 2023)

No	Name of strategy, program, plan	Date of acceptance	Source of publication
1.	National Climate Change Strategy of Turkmenistan (new version)	Approved by Presidential Decree of 23 September 2019	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 9. Art. 1301. https://www.undp.org/sites/g/files/zskgke326/files/migration/tm/undp-tm-NCCS_RUS.pdf
2.	National Program of Socio-Economic Development of Turkmenistan for the period 2011-2030	Approved by Presidential Decision of 14 May 2010, No. 11061	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2010. No. 5. Art. 865
3.	National Program of Socio-Economic Development of Turkmenistan for 2022-2052	Approved by Presidential Decision of 11 February 2022, No. 2601	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2022. No. 2. Art. 2149
4.	Program of the President of Turkmenistan on socio-economic development of the country for 2019-2025	Approved by Presidential Decision of 1 February 2019, No. 1111	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 2. Art. 1045
5.	Program of the President of Turkmenistan for socio-economic development of the country in 2022-2028	Approved by Presidential Decision of 8 July 2022, No. 159	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2022. No. 7-8. Art. 184
6.	The National Program of the President of Turkmenistan for the transformation of the social and living conditions of the population of villages, settlements, etrap towns and etrap centers for the period up to 2028	Approved by Presidential Decision of 8 July 2022, No. 178	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2022. No. 7-8. Art. 183
7.	National Program for the Elimination of Ozone Depleting Substances of 15 March 2007		Approved by the State Commission on ensuring the fulfilment of Turkmenistan's obligations arising from UN conventions and programs on the environment

8.	National Oil Spill Prevention and Response Plan of Turkmenistan	Approved by a Presidential Decision of 21 August 2001	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2001. No. 8. Art. 406
9.	National Caspian Action Plan of Turkmenistan	Approved by Presidential Decision in 2012	
10.	State program on energy savings for 2018-2024	Approved by Presidential Decision of 21 February 2018, No. 674	
11.	State Program for the Construction of Turkmen Lake Altyn Asyr	Approved by Presidential Decision of 31 August 2000, No. PP-3172	
12.	Concept for the development of the Altyn Asyr Lake region for 2019-2025	Approved by Presidential Decision of 19 April 2019, No. 1207	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2019. No. 4. Art. 1122
13.	Turkmenistan's Agricultural Development Program for 2019-2025	Approved by Presidential Decision in 2019.	
14.	National program and action plan for the implementation of the main provisions of the state policy on civil defense and rescue operations on 2019-2030	Approved by Presidential Decision of 1 March 2019, No. 1156	
15.	National Strategy of Turkmenistan for the Development of Renewable Energy for the Period until 2030	Approved by Presidential Decision of 4 December 2020.	
16.	National Forest Program of Turkmenistan 2021-2025	Approved by Presidential Decision of 25 June 2021	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2021. No. 6. Art. 1935
17.	National Aral Program of Turkmenistan for 2021-2025	Approved by Presidential Decision of 22 October 2021	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2021. No. 10. Art. 2086
18.	The President's State program on health (new version)	Approved by Presidential Decision of 26 March 2021, No. 2195	Collection of Acts of the President of Turkmenistan and Decisions of the Government of Turkmenistan. 2021. No. 3. Art. 1875

10.3 Annex 3

List of laws of foreign countries governing climate change

(as of October 2022)

No	Name of the legislative act	Date of acceptance and source link
1.	Austria Climate Protection Act	2011, supplemented December 2015 and April 2017 https://climate-laws.org/geographies/austria/laws/climate-protection-act-klimaschutzgeset
2.	Australia Climate Change Act	September 2022 https://climate-laws.org/geographies/australia/laws/climate-change-bill-2022
3.	Albania Climate Change Act	December 2020, No. 155/2020 https://climate-laws.org/geographies/albania/laws/law-no-155-2020-on-climate-change
4.	Bahamas Law on Climate Change and Carbon Market Initiatives	May 2022 https://climate-laws.org/geographies/bahamas-the/laws/climate-change-and-carbon-market-initiatives-act-2022
5.	Benin Law regulating measures to combat climate change	June 2018, No. 2018/18 https://climate-laws.org/geographies/benin/laws/law-no-2018-18-regulating-climate-change-actions
6.	UK Climate Change Act	December 2008, cited, supplemented June 2019. https://climate-laws.org/geographies/united-kingdom/laws/climate-change-act-34405aa9-396e-4a78-a662-20cad9696365
7.	Hungary Climate Protection Act	June 2020 https://climate-laws.org/geographies/hungary/laws/law-on-climate-protection
8.	Guatemala Framework Law Governing Vulnerability Reduction, Mandatory Adaptation to Climate Change Impacts and Greenhouse Gas Mitigation (Congressional Decree 7-2013)	2013. https://climate-laws.org/document/framework-law-to-regulate-reduction-of-vulnerability-mandatory-adaptation-to-the-effects-of-climate-change-and-the-mitigation-of-greenhouse-gas-effects-decree-of-the-congress-7-2013_6c9f?q=Climate+Change+Laws+of+the+World&c=Legislation&o=40
9.	Germany Climate Protection Act and changes to additional regulations	December 2019, supplemented June 2021 https://climate-laws.org/geographies/germany/laws/federal-climate-protection-act-and-to-change-further-regulations-bundesklimaschutzgesetz-or-ksg

10.	Denmark Climate Law	26 June 2020, #965, supplemented 2021 https://climate-laws.org/geographies/denmark/laws/the-climate-act
11.	Dominican Republic Climate Resilience Act	2018 https://climate-laws.org/document/climate-resilience-act-2018_5552?q=Climate+Change+Laws+of+the+World&c=Legislation&o=80
12.	European Union Climate Law	9 July 2021, entered into force 29 July 2021 https://climate.ec.europa.eu/eu-action/european-green-deal/european-climate-law_en
13.	Spain Climate Change and Energy Transition Act	May 2021 https://climate-laws.org/geographies/spain/laws/law-7-2021-on-climate-change-and-energy-transition
14.	Canada Zero Emissions Accountability Act	2021 https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050/canadian-net-zero-emissions-accountability-act.html
15.	Republic of Kazakhstan Environmental Code (Chapter 20. State regulation in the sphere of GHG emissions and removals)	2 January 2021, No. 400-VI ZRC https://adilet.zan.kz/rus/docs/K2100000400
16.	Kyrgyz Republic Law on State Regulation and Policy in the Field of Greenhouse Gas Emission and Sinking"	25 May 2007, No. 71 http://cbd.minjust.gov.kg/act/view/ru-ru/202104/10?cl=ru-ru
17.	Kenya Climate Change Act	May 2016 https://climate-laws.org/geographies/kenya/laws/climate-change-act-2016
18.	Colombia An Act establishing guidelines for the management of climate change National Decree on Climate Change (SISCLIMA)	July 2018, No. 1931 https://climate-laws.org/geographies/colombia/laws/law-no-1931-establishing-guidelines-for-the-management-of-climate-change February 2016 https://climate-laws.org/geographies/colombia/policies/national-climate-change-decree-sisclima
19.	Mauritania Climate Change Act	November 2020, No. 11/2020 https://climate-laws.org/geographies/mauritius/laws/climate-change-act-2020-no-11-2020
20.	Malta Climate Change Act	7 July 2015, supplemented February 2020 https://climate-laws.org/geographies/malta/laws/climate-action-act
21.	Micronesia Climate Change Act	2013 https://climate-laws.org/document/federated-states-of-micronesia-climate-change-act_a0d5?q=Climate+Change+Laws+of+the+World&c=Legislation&o=10

22.	Mexico General law on climate change	June 2012, supplemented July 2018 https://climate-laws.org/geographies/mexico/laws/general-law-on-climate-change
23.	Nauru Environmental Management and Climate Change Act	October 2020, No. 34/2020 https://climate-laws.org/geographies/nauru/laws/environmental-management-and-climate-change-act-no-34-2020
24.	Nigeria Climate Change Act	November 2021 https://climate-laws.org/geographies/nigeria/laws/nigeria-s-climate-change-act
25.	Netherlands Climate Law	July 2019 https://climate-laws.org/geographies/netherlands/laws/climate-act-7e97c6bc-9baf-4ccc-be38-b8a1dbc5af08
26.	Nicaragua A. N. Resolution on Climate Change and Adaptability	2009 г. No. 003-2009 https://climate-laws.org/document/resolution-a-n-no-003-2009-on-climate-change-and-adaptability_e412?q=Climate+Change+Laws+of+the+World&c=Legislation&o=30
27.	New Zealand Climate Change Response Act	2002, as supplemented in 2002 https://climate-laws.org/document/climate-change-response-zero-carbon-amendment-act-amending-the-climate-change-response-act-2002_abaa?q=Climate+Change+Laws+of+the+World&c=Legislation&o=10.
28.	Norway Climate Change Act	June 2017 https://climate-laws.org/geographies/norway/laws/climate-change-act
29.	Peru Framework Act on Climate Change	April 2020, No. 30754, with addendum dated January 2020 https://climate-laws.org/geographies/peru/laws/framework-law-no-30754-on-climate-change
30.	Portugal Framework Law on Climate	December 2021, No. 98/2021 https://climate-laws.org/document/framework-climate-law-no-98-2021_2801?l=portugal
31.	Russia Law "On limitation of greenhouse gas emissions"	2 July 2021, NO. 296-FZ https://climate-laws.org/document/federal-law-no-296-fz-on-limiting-greenhouse-gas-emissions_1d0b
32.	Serbia Climate Change Act	March 2021 https://climate-laws.org/geographies/serbia/laws/serbian-law-on-climate-change
33.	Taiwan Climate Change Response Act	2015 https://climate-laws.org/document/greenhouse-gas-reduction-and-management-act_1357?q=Climate+Change+Laws+of+the+World&c=Legislation&o=80

34.	Uganda National Climate Change Act	2021 https://climate-laws.org/document/national-climate-change-act-2021_aeec?q=Climate+Change+Laws+of+the+World&c=Legislation&o=30
35.	Fiji Climate Change Act	September 2021 https://climate-laws.org/geographies/fiji/laws/climate-change-act-2021
36.	Finland Climate Change Act	March 2015, No. 609/2015 https://climate-laws.org/geographies/finland/laws/climate-change-act-609-2015
37.	Philippines Climate Change Act (RA 9729) and its implementing rules and regulations (IRR, Administrative Order No. 2010-01)	2009 https://climate-laws.org/document/the-climate-change-act-ra-9729-and-its-implementing-rules-and-regulations-irr-administrative-order-no-2010-01_a739?q=Climate+Change+Laws+of+the+World&c=Legislation&o=30
38.	France Law on Combating Climate Change and Sustainability	August 2021, No. 2021-1104 https://climate-laws.org/geographies/france/laws/law-no-2021-1104-on-the-fight-on-climate-change-and-resilience
39.	Montenegro Law on Protection from the Adverse Effects of Climate Change	2019 https://climate-laws.org/document/law-on-protection-from-the-negative-impacts-of-climate-change_2c3c?q=Climate+Change+Laws+of+the+World&c=Legislation&o=40
40.	Chile Framework Act on Climate Change	June 2022 https://climate-laws.org/geographies/chile/laws/framework-law-on-climate-change-chile
41.	Sweden Climate Law	June 2017, with supplement dated January 2018 https://climate-laws.org/geographies/sweden/laws/climate-act
42.	South Korea Law on allocation and trading of GHG emission permits	2012 https://climate-laws.org/document/act-on-the-allocation-and-trading-of-greenhouse-gas-emission-permits_f021?q=Climate+Change+Laws+of+the+World&c=Legislation&o=80
43.	Japan Act to Promote Measures to Counteract Global Warming	1998, No. 117 https://climate-laws.org/geographies/japan/laws/act-on-promotion-of-global-warming-countermeasures-law-no-117-of-1998

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Legal protection of climate in Turkmenistan

Further climate warming is expected in Central Asia: an increase in air temperature and a decrease in precipitation. As a country located in the arid zone, Turkmenistan is vulnerable to the adverse effects of climate change due to the steady increase in temperature and water deficit. Turkmenistan is taking steps to address climate change with mitigation and adaptation measures laid down in national strategies and programs. The problem of climate change in domestic legal science affecting aspects of the implementation of the provisions of the international climate treaties has to be comprehensively studied. In this regard, it is important to consider such issues in the context of international legal instruments and national legislation. This report contributes to understanding the related subject of climate law. The report was written in the framework of the EU-funded project "Central Asian Law: Legal Cultures and Business Environments in Central Asia" (project number 870647 Horizon 2020 MSCA-RISE 2019) and "MOCCA: Multilevel Orders of Corruption in Central Asia" (project number 101085855 Horizon Europe MSCA-SE 2021). The project is coordinated by Lund University.

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